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NEW YORK WORLD'S FAIR
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Introduction

HIS Majesty's Government in the United Kingdom of Great Britain and Northern Ireland welcomed the opportunity afforded by the New York World's Fair to associate themselves with the Government of the United States of America and the Governments of the many other nations taking part in the exhibition in celebrating the event which it commemorates—the 150th anniversary of the inauguration of America's first President—and in presenting a picture of the aims and achievements of the world of to-day that will play their part in “building the world of to-morrow,” which is the theme of the exhibition.

An attempt has been made to illustrate, on such a scale as limitations of space allow, some of the outstanding features of the contribution of the United Kingdom to the arts of peace and the advancement of civilization. At the same time—having regard to the nature of the relationship of this country and the United States—it was felt that opportunity might be taken to recall some features of our common history, in which the world of to-day and the world of to-morrow have their roots. The visitor to the British Pavilion will accordingly find in the Court of Honour a series of exhibits recalling the age of feudalism and chivalry, and in Magna Carta Hall an attempt to picture the slow but sure development of self-government from its earliest beginnings.



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The Pavilion

THE British Pavilion was designed by Messrs. Stanley Hall & Easton and Robertson. The design derives more from the nature of the problem than from the desire to express any particular phase of architectural development. It is contemporary in spirit and makes no conscious acknowledgment to tradition, nor is it modelled on any given prototype. Its mass and detail elements are rather the result of specific aims and requirements arising from the site and the nature of the exhibits.

The dual nature of the Pavilion—the south building being separated from the north building by a road—necessitated a particular solution, for the first floor of the south building is entirely given over to the exhibits of Australia, New Zealand, and the British Colonial Empire. The Court of Honour is on the second floor, and acts as a vestibule to the main British exhibit in the north building ; it is of necessity approached by steps. The solution adopted is a wide double external staircase, leading to twin ante-rooms.

The shell of this building was provided by the World's Fair authorities, but its decoration and the attributes designating its purpose as the introduction to the British exhibit are the work of British architects and artists.

From the Court of Honour a broad bridge leads to the north building. The approach to this at first-floor level is an unusual arrangement, but one which has been employed by the Architects to give the design a special character. Visitors are led by a gradual descent to the first floor *via* a mezzanine which

THE PAVILION

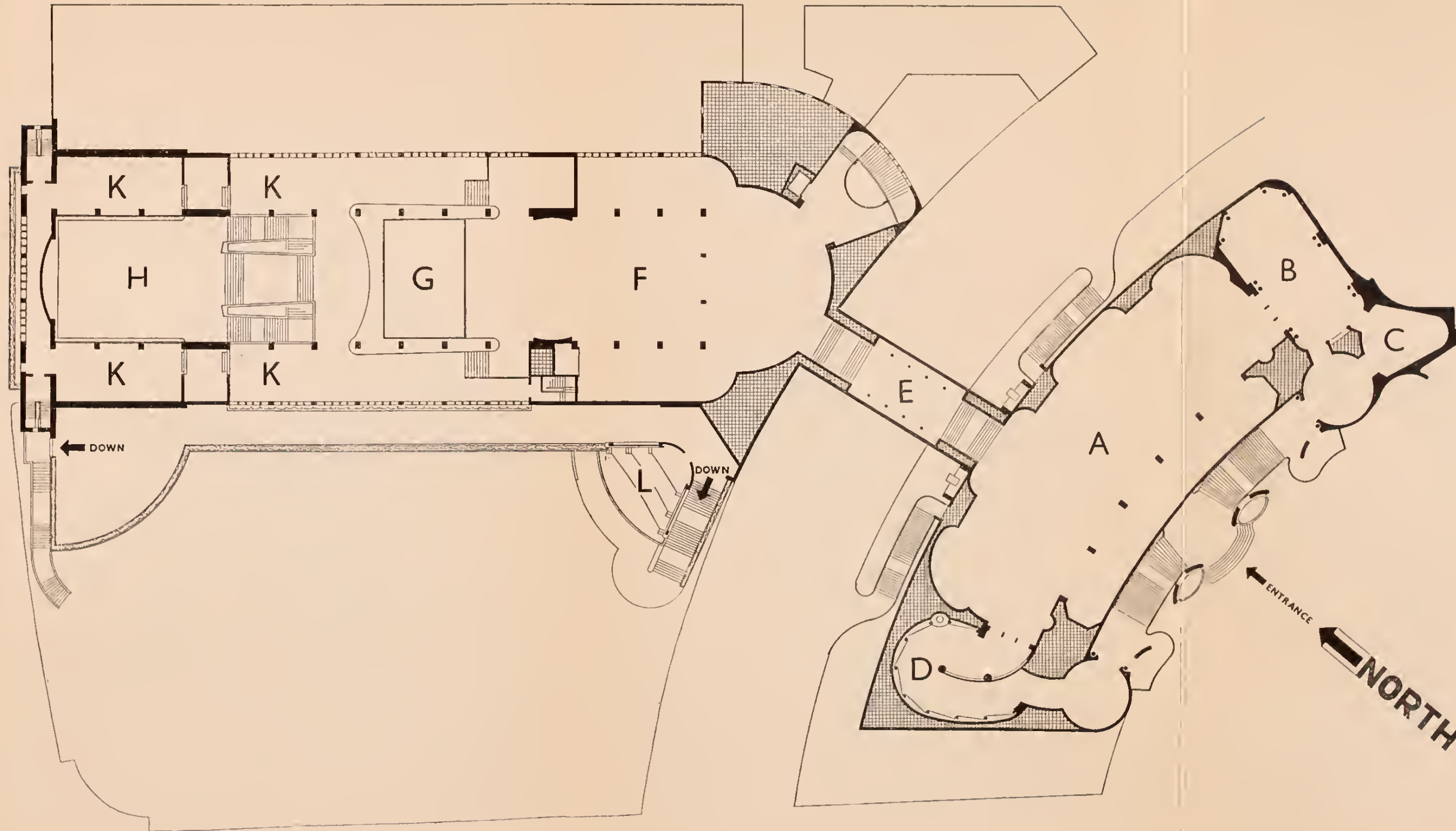
contains the climax of the main vista, the "Attractions of Britain" exhibit, dominated by a 40-ft. gilded statue which was modelled and cast in England.

Visitors descend from the level of this exhibit to the Art Gallery with its adjacent "Buttery" opening into the English garden designed as the sector of a circle. They then visit the "Hall of Metals" and leave the Pavilion through the "Magna Carta Hall" and its rotunda, which is in itself an auxiliary entrance to the building, with stairs and elevator.

Features of the design of the British Pavilion are the employment of daylight lighting for the majority of the sections, including the maritime exhibit, with its long row of windows overlooking the English garden ; the great statue which dominates the "Attractions of Britain" section ; and the air-conditioned cinema and "Buttery." The raised bandstand, with its garden gallery, is also characteristic, as is the external expression of the building marking the descending level of floors and the simultaneous heightening of the roof with its clerestory lighting.

The external sculpture and decorative motifs are based upon heraldic themes, and the clothing of the structure is finished in an English material containing mica as one of its ingredients. The main entrance doors in nickel silver to the architects' special design were supplied on loan by the Mond Nickel Co., Ltd. The garden in layout, planting, and workmanship is based on English traditions.

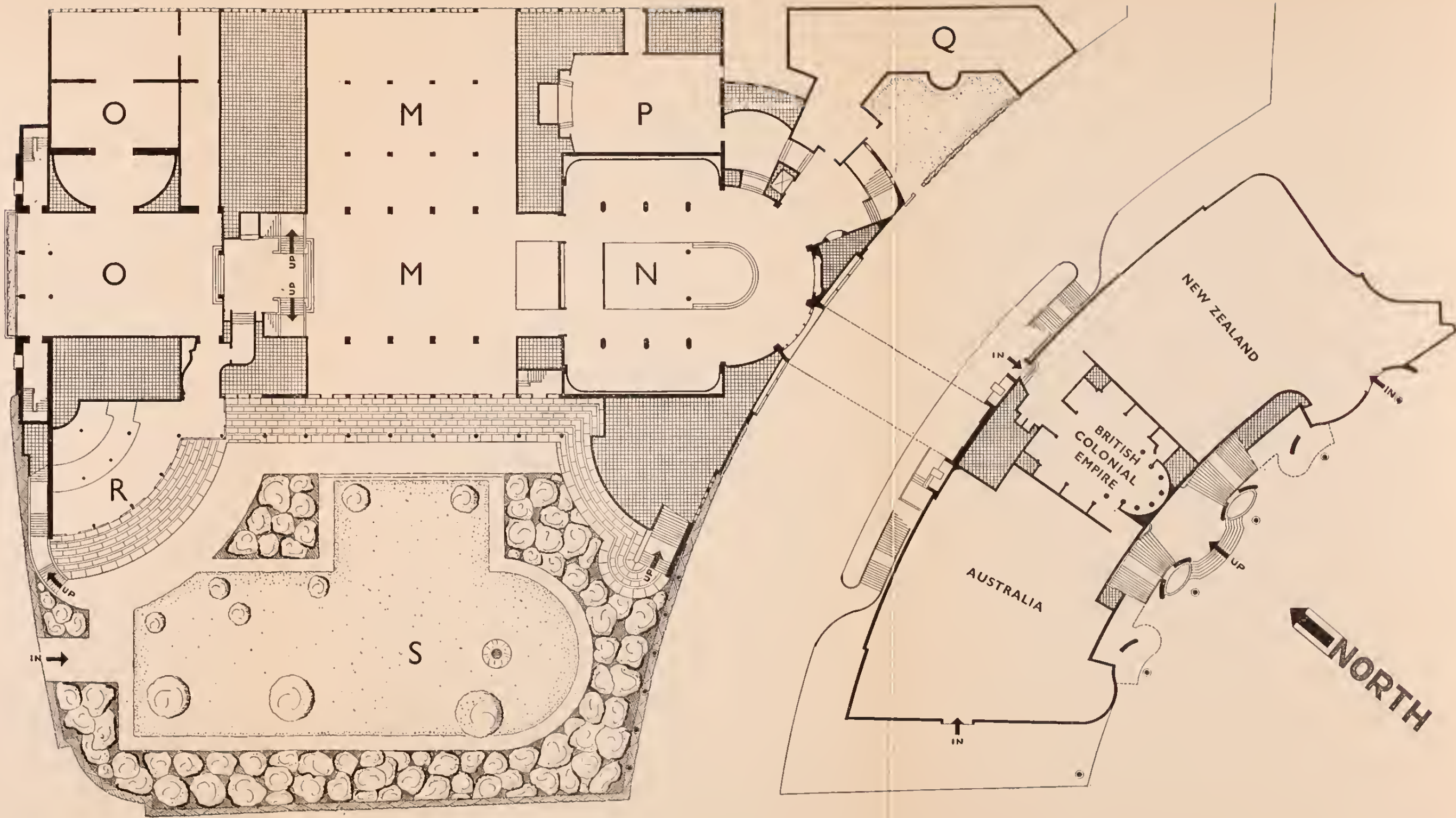
PLAN OF THE PAVILION SECOND FLOOR



- A. THE COURT OF HONOUR
- B. THE ROYAL ROOM
- C. THE CROWN JEWELS
- D. THE SILVER ROOM
- E. "WESTMINSTER" BRIDGE
- F. PUBLIC WELFARE HALL
- G. MARITIME HALL
- H. ATTRACTIONS OF
BRITAIN HALL
- K. THE GALLERY
- L. BAND STAND

PLAN OF
THE PAVILION
FIRST FLOOR

- M. HALL OF METALS
- N. MAGNA CARTA HALL
- O. ART GALLERY
- P. CINEMA
- Q. ADMINISTRATION
- R. THE BRITISH
" BUTTERY "
- S. THE ENGLISH GARDEN



The Court of Honour



ON the wall behind the colonnade, against a background of rich velvet, is a series of gilt and coloured panels and shields, modelled in high relief, depicting the Historic Heraldry of Britain. There are seven bays, each covering a century, from the thirteenth to the nineteenth (the twelfth century, when heraldry first appeared, being included with the thirteenth, and the twentieth with the nineteenth). In the centre of each bay are two large panels of two outstanding historical figures of each century, while on either side of these are the shields of sixteen (or, in the first and last panels, twenty-four) others. The central figures for the mediæval centuries are shown as mounted knights, each with his Arms on shield, surcoat, and horse trapper, and his Crest on his helm. For the modern period full Achievements of Arms with Supporters are shown. There are thus six mounted knights, eight full Achievements, and 128 shields. The principle adopted has been to rely for mediæval Arms upon contemporary evidence of use, and for modern ones on official record. The names included are meant to represent, as far as possible, all aspects of national achievement. The scheme was planned and the research carried out by Anthony R. Wagner, Portcullis Pursuivant, the selection of historical names being supervised by Professor V. H. Galbraith.

On the wall opposite the Heraldry exhibit is a display of antique plate loaned by the City Livery Companies of London, which have flourished since the Middle Ages, when they were Trade Guilds.

It is appropriate that the Livery Companies should be lending their plate, for these collections recall in many picturesque ways the history and traditions of the Guilds of London. Cups given by individual members to their Guilds are common to most countries and these form the largest section in the exhibit. The Master's Steeple Cup of the Carpenters (an essentially British type) is one of a set of four given by the four Wardens at the beginning of the seventeenth century. Reminiscent of these are the four amusingly conceived contemporary cups of the Innholders. The early eighteenth-century Brand Cup of the Drapers is a magnificent monument to the solidity and dignity of the Companies.

Glimpses into the history of London are seen in some of the plate. The Bank of England Cup was given to the Mercers in 1694 in recognition of the loan of their hall for the first meetings of the Bank. Great figures in English history have been members of the Companies, amongst whom is Samuel Pepys. A ewer, given by him and engraved with his Arms and a Latin inscription, doubtless carefully thought out by himself, is lent by the Clothworkers. One of the oldest sporting events in England is recorded in Doggett's Badge. This has been competed for by watermen in a sculling race on the Thames since 1715, under the auspices of the Fishmongers' Company.

Some traditional ceremonies of the Companies, which have been handed down for centuries, such as drinking from a loving cup to celebrate the memory of a benefactor and the passing of a rosewater dish round the table at banquets, are still carried on regularly by the Companies. It is fitting, therefore,

that one of these ancient traditions should cross the Atlantic in the gift of a rosewater dish from the Corporation and twelve chief Livery Companies of London to the City of New York. This dish was designed by a young, contemporary British designer.

Along the same wall on which the gold plate is displayed will be found an exhibit of modern book-binding organized in co-operation with the Master Bookbinders' Association of London.

The Court of Honour is entered through two ante-rooms, the Royal Room and the Silver Room.

The Royal Room

The four large paintings symbolize four episodes of British history in terms of Royal and Imperial Heraldry, and emphasize the manner in which Britain's history has centred round her kings. The shields in the borders are those of our sovereigns and their consorts.

The first panel symbolizes the Hundred Years' War by figures of the Kings of England and France, mounted and heraldically habited, tilting for the crown and shield of France. Above the King of England are his badge, the Sunburst, and the Garter of his famous Order of Knighthood. Above the King of France are the Star of his Order of the Star, and his badge, the Flying Hart.

In the upper border are the shields of English and Scottish sovereigns to the time of Edward III ; in the lower, those of the English kings' consorts.

The second panel symbolizes the Wars of the Roses by two rose-bushes, the White Rose for York

and the Red Rose for Lancaster, in front of a striped paling of the respective livery colours of the two houses, blue and white for Lancaster, blue and murrey for York. Between and over them hang three crowned shields of the Arms used by the Kings of England in this period. In the centre that of Richard II, with his badge, the White Hart, below ; to the left that of Henry IV, with his collar of SS depending ; and to the right that of his successors, with the Yorkist collar of Suns and Roses. Under the bushes are grouped the badges of the two factions : for Lancaster the Beacon, Antelope, and Swan ; for York the White Lion, Boar, and Falcon and Fetterlock. In the borders are shields of English consorts.

The third panel symbolizes Tudor pageantry by a composition centred on the Royal Arms between the shields of Ireland (first used by English kings at this period) and Wales (for the Tudors' Welsh descent). Above on a mount is the badge of the crown in the Hawthorn Bush, as it was found after Henry VII's victory at Bosworth. On either side of this stand "Royal Beasts" supporting banners of other Tudor badges : Henry VII's Greyhound with the crowned Tudor Rose ; the Apostolic Eagle of Katherine of Arragon, with her badge, the Sheaf of Arrows ; the Unicorn of Jane Seymour, with the badge of her son, Edward VI ; her Panther with the crowned Red Rose of Lancaster ; the Clarence Bull with the crowned White Rose en Soleil of York ; and the Beaufort Yale with the crowned Portcullis. In the borders are the shields and badges of the Tudor consorts.

The fourth panel symbolizes the age of colonization, following the union of the English and Scottish

Crowns, by a ship flying the flags of Saint George, Saint Andrew, the Union (of England and Scotland) of 1603, Saint Patrick, and the Union (with Ireland) of 1801. On the deck stand colonists supporting banners of the British Empire, and in a boat is a colonist with the banner of the United States of America. Britannia at the stern holds out her trident over Neptune rising from the waves. Land seen on the right represents the British Isles, and on the left America. In the upper border are the shields of sovereigns since the Union, and in the lower border those of consorts.

These panels were also planned and the research carried out by Anthony R. Wagner, Portcullis Pursuivant.

Historic Books

A wall case at one end of the Royal Room contains the following interesting historic books :

The New Testament in Greek, 1550, bound for Queen Elizabeth in red velvet with gold stamped panels and enamelled Coat-of-Arms. The decoration is usually described as the English "Lyonnese" style, the characteristics of which are massive gold centre and corner ornaments.

A book bound for Robert Dudley Earl of Leicester, suitor for the hand of Queen Elizabeth. It is bound in contemporary English calf and is tooled and gilded to a Grolieresque pattern. In the centre of each side is impressed the crest of the Earl of Leicester (the bear and ragged staff). The date of the book is 1545, and it is a splendid example of English binding of the sixteenth century.

A book of the Gospels shown open at a page containing notes in the handwriting of King Charles I. The book was executed by the "Nuns" of Little Gidding in Huntingdonshire in 1630. The verses and engravings were cut from black-letter bibles and rearranged on sheets of thick paper so that the Gospel story could be read as one continuous history. After the volume came into the possession of King Charles I it was recorded that "not a day passed but the King spent one hour in the perusing of it." He is said to have referred to it as a jewel that he would "upon no terms part with."

Loyal Addresses

Other wall cases in the Royal Room contain two fine modern examples of illuminated calligraphy. These take the form of loyal addresses from the Royal Academy of Arts and the Royal Institute of British Architects to His Majesty King George VI on the occasion of his Coronation. The addresses have been graciously lent by His Majesty.

The Crown Jewels

In an annexe to the Royal Room will be found replicas of the Crown Jewels of Great Britain. They date mainly from the Restoration, the ancient Regalia, which had accumulated since the reign of King Alfred, having been destroyed by order of the Commonwealth Government. A few items survived, however—the Ampulla and Anointing Spoon and some of the more important jewels, notably the Black Prince's ruby and the sapphire from Saint Edward's ring. The new set was made to resemble as far as possible that which

had been destroyed, and the names attached to the old ornaments were given to the new ones. Thus the Coronation Crown was called Saint Edward's Crown. This is the crown with which the Sovereign is actually crowned ; it is of gold and set with diamonds, rubies, emeralds, sapphires, and pearls.

The Crown of Saint Edward being used only for the Coronation ceremony, it is necessary for the Sovereign to have another crown to be worn on other occasions of state. This is known as the Imperial Crown of State. In front of it will be seen the Second Star of Africa, cut from the Cullinan diamond found near Pretoria in 1905 and presented to King Edward VII by the South African Government. It weighs $309\frac{3}{16}$ carats and is the second largest cut diamond in existence. Above it is the Black Prince's ruby. From the arches hang four large pear-shaped pearls, said to have been the ear-rings of Queen Elizabeth. In the centre of the diamond cross surmounting the crown is the sapphire said to have adorned the ring of Edward the Confessor.

The Imperial Crown of India was made for the Durbar held by King George V in 1912.

In Queen Mary's Crown, made for the Coronation of 1911, only diamonds are used. In the cross in front is the famous Koh-i-noor, weighing 108 carats, and below it is the Fourth Star of Africa from the Cullinan diamond, weighing 62 carats. In the centre of the cross surmounting the crown is a pear-shaped diamond, the Third Star of Africa, weighing 92 carats.

The Prince of Wales's Crown is of plain gold.

Queen Elizabeth's Crown and the Coronets of Princess Elizabeth and Princess Margaret Rose are

the latest additions to the Regalia, having been made for the Coronation of King George VI and Queen Elizabeth in 1937.

The sceptre is perhaps the most ancient emblem of royalty, and no fewer than five are included in the Regalia. The King's Royal Sceptre with the Cross is placed in the right hand of the Sovereign at the Coronation. It contains the Star of Africa, the largest cut diamond in the world, weighing $516\frac{1}{2}$ carats, which was cut from the Cullinan diamond. The Sceptre with the Dove is placed in the left hand of the sovereign at the Coronation. The Orb is surmounted by a cross on which rests a white enamelled dove with outstretched wings. Replicas are also shown of the Queen's Sceptre with the Cross and the Queen's Sceptre with the Dove. The latter is not now used at the Coronation, being replaced by the Queen's Ivory Rod, which also is surmounted by a dove.

Saint Edward's Staff, known as the Rod of Justice and Equity, is supposed to guide the footsteps of the King. The King's Orb, surmounted by the cross, signifying independent sovereignty under the cross of Christianity, is placed in the King's hand after he has been crowned. The Queen's Orb dates from the Coronation of William and Mary, when both were crowned as reigning sovereigns.

The swords include the Sword of State, the Jewelled Sword of State, the Swords of Spiritual and Temporal Justice, and the Curtana, or Sword of Mercy. The Sword of State is carried before the King at the opening of Parliament and other state ceremonies. At the Coronation it is carried in the procession, but is replaced by the Jewelled Sword with

which the King is invested. The other three swords are copies of those sent by Pope Clement to Henry VIII when he bestowed on him the title of Defender of the Faith. They are all carried behind the King by peers at the Coronation.

The Ampulla, in the form of a golden eagle, holds the oil with which the King is anointed. This and the Spoon into which the oil is poured are, as stated above, both much older than the rest of the Regalia.

Other ornaments included in the Regalia are the Ring which is placed on the King's finger during the Coronation, the Bracelets, the King's Garter, worn below the left knee, the Queen's Garter, worn on the left arm, and Saint George's Spurs. The Royal Mace is one of those carried by the Serjeants-at-Arms at the Coronation and on certain other occasions.

The Silver Room

The craft of the silversmith still flourishes under the patronage of the Goldsmiths' Company, who have helped in collecting for the British Pavilion examples of modern work, which represents the best designers of to-day. These are equally interesting as works of art and for their associations. The Calix Majestatis, graciously lent by His Majesty King George VI, is a magnificent experiment by a sculptor in modern design. This Cup is intended to commemorate the Coronation of King George VI and Queen Elizabeth. The Royal Crest surmounts the cover of the Cup, the Coat-of-Arms and Garter adorn its body, and the supporting Lion and Unicorn take the position of handles. The plinth, carved from Devon marble,

shows figuratively the number of historic dynasties which have occupied the throne. In contrast, the Dish and Beaker from Corpus Christi College, Cambridge, are more traditional, but as pieces of craftsmanship they bring out the qualities of the metal as well as anything in the collection. Many current interests are represented in this small exhibit of ceremonial plate ; the Church, Education, Banking, Transport, Physical Fitness, and Sport all offer their contribution, for the silversmith is an artist who can touch life at many points.

An exhibit prepared by the Royal Mint is included in this room. Just over 1,000 years ago (A.D. 928) Alfred the Great's grandson, King Aethelstan, issued minting regulations, which are the earliest surviving charter of the London Mint.

The Exhibit is confined to its most recent work :

COINS : the British coinage of King George VI, including his Maundy money ; coins struck for a number of Dominions and Colonies, etc. ; coins struck under contract for foreign governments.

MEDALS : a few official awards ; medals struck for public bodies or private persons.

SEALS : impressions of the Great Seal of the Realm ; the Duchy and County Palatine of Lancaster Seals and Public Seals of Colonies.

The display work in the Court of Honour and the Royal and Silver Rooms is by Mr. Ronald Dickens.

“ Westminster Bridge ”

On leaving the Court of Honour the visitor passes across the bridge connecting with the second floor of

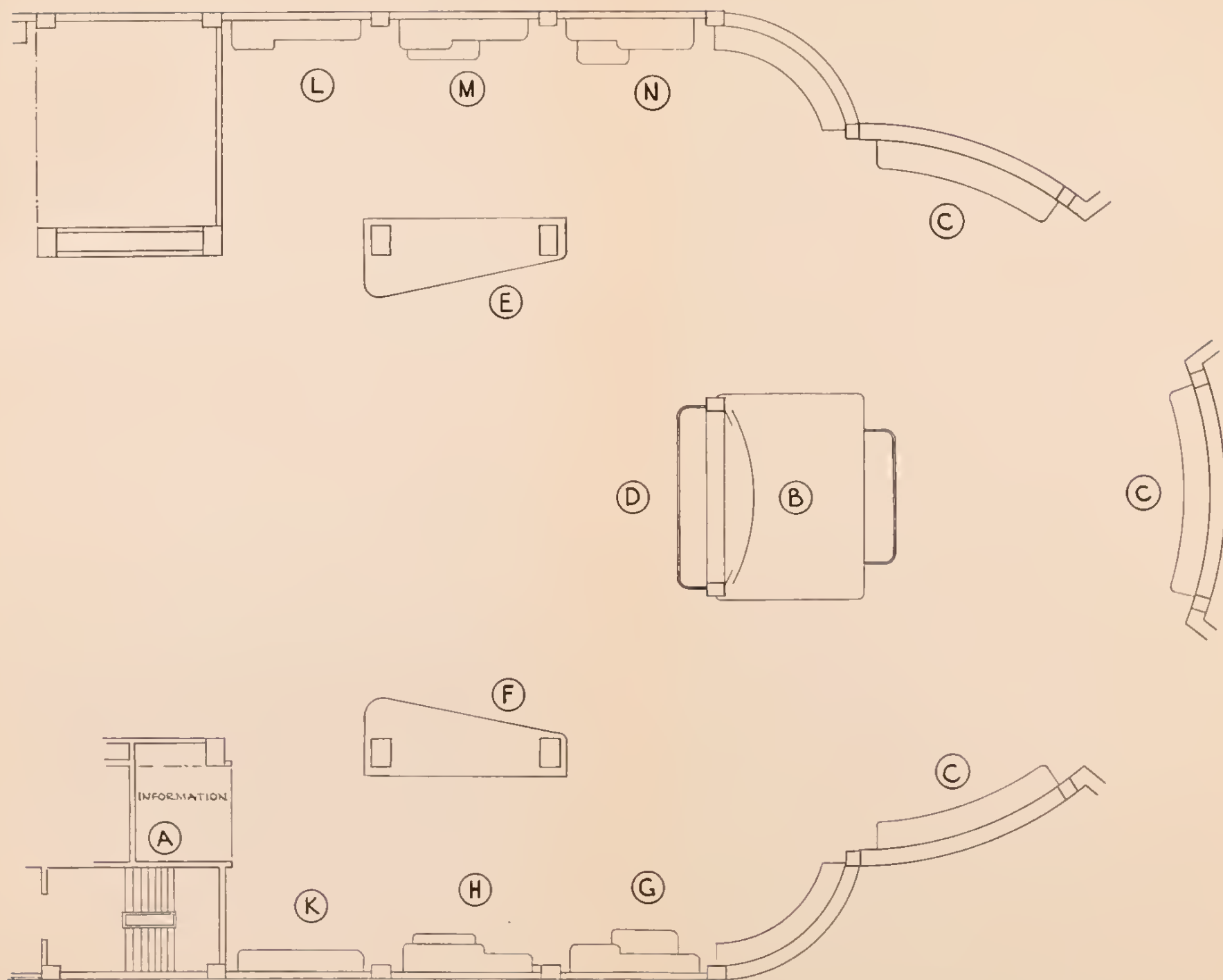
the North Pavilion. On each side of the entrance is an English early seventeenth-century suit of cuirassier's armour, loaned from the Tower of London. On either side of the bridge are views seen when crossing the River Thames over Westminster Bridge in London. The bridge leads the visitor into the Public Welfare Hall.

Public Welfare Hall

BRITAIN—land of the English village, the Welsh mountain, and the Scottish glen ; home of Shakespeare and Milton, of Dickens and Thackeray, Robert Burns and Walter Scott, of Raleigh, the Pilgrim Fathers and William Penn, of Wesley and George Fox, of Florence Nightingale, of hundreds of other men and women whose names are household words on both sides of the Atlantic. Britain—where the Industrial Revolution began, covering great stretches of land with factories and carrying British manufactures in British ships to every port and country in the world. Britain—where 46,000,000 people live in a territory smaller than Oregon, holding fast to democratic institutions and an historic tradition of political stability and personal freedom.

That is the old, familiar Britain. But there is another and a newer Britain—a country where great schemes of social security, financed by contributions from employer, worker, and Government, protect the whole working population against the worst evils of sickness, bereavement, unemployment, and old age ; where a continuing campaign, maintained with the help of heavy subsidies from national and local taxes, is steadily clearing away the old reproach of the slums and providing all with uncrowded houseroom within their individual means. Britain to-day everywhere enjoys services for the care of mother and child, a modern system of universal education, Government facilities for training young and unemployed workers, and a network of national employment exchanges assisting employers to find workers and workers to find

PLAN OF THE PUBLIC WELFARE HALL



jobs. Village life continues as sturdily as ever, with modern welfare services to meet special rural needs. Leisure hours in town or country, in England or Scotland or Wales, bring unrivalled opportunities for bodily and mental recreation within the reach of all—opportunities that are improved in many ways by public money, both local and national, but are free from the trammels of Government regulation and control.

Practically all these services are the joint product of public and private effort, and their day-to-day administration is based on harmonious co-operation between the central Government Departments,* other public bodies (especially the local municipal authorities freely elected by the inhabitants), and private organizations of every kind (especially those represented on the National Council of Social Service).

Information Bureau

[A]

All visitors who are interested in the details of British public welfare services are cordially invited to make themselves known at the Information Bureau, where Government and private publications are available and where the officer in charge will be happy to answer inquiries. Questions requiring reference to Great Britain will be dealt with by return of post, and the replies forwarded to any address in the United States or Canada.

N.B. The reference letters in brackets [] inserted after section headings refer to the key plan.

* Chiefly the Ministry of Health and the Department of Health for Scotland, the Board of Education and the Scottish Education Department, and the Ministry of Labour.

Changing Britain

[B]

The visitor who crosses "Westminster Bridge" at once finds himself face to face with a literal representation of the title theme. Before him stretches a model 15 ft. long of a typical English town of about three hundred years ago; Shakespeare has just died and the Pilgrim Fathers are soon to set sail. Streets of half-timbered houses with their gardens cluster round abbey, castle, and market-place. Outside the town walls stretches open countryside not yet cut up into fields, with an ancient manor-house in the distance and nearer the town an old tilt-yard where the mediæval sports are not yet all abandoned. England is still Merrie England.

But the town changes before the onlooker's eyes. Gradually castle, abbey, and town walls fall into decay. The old houses become tumble-down and overcrowded and their gardens are given up to rows and rows of ugly little brick boxes. A railroad comes into one side of the picture and the smoke from the locomotives mingles with the smoke from tall factory chimneys to form a heavy pall over the whole town. Grimy industrial works stand where the green fields used to be. In the foreground is a gaunt workhouse, whose close resemblance to a prison does not stop at outward appearances. We have arrived at the heyday of the Industrial Revolution, about a hundred years ago. Britain was the workshop of the world, growing richer and more populous every year. National energy was concentrated on industrial production; men, women, and small children worked incredibly long hours in the factories and mines and their few hours of rest

and sleep were spent in filthy slums and rickety hovels, ill-built, ill-ventilated, and without water or sanitary conveniences of any kind. History knows part of this grim period as the "Hungry Forties" and it stands recorded for ever in the works of Charles Dickens.

The Town of To-day

Events, however, do not stand still, and the scene is changing again. This time it is changing for the better—to the town as we know it to-day. The abbey and castle and walls are still there, grown mellow with age but now kept in careful repair. Some of the old factory buildings remain, but they are being rapidly replaced by new ones, which are light and airy and consume their own smoke and effluent. Modern roads with all the apparatus of roundabouts and traffic lights are supplementing or replacing the old highway system. The slums are being steadily pulled down, and in their place a garden suburb is springing up on the outskirts with all the facilities for healthy recreation. Most significant of all are the numerous buildings scattered over the town which are devoted to public welfare services unknown a hundred years ago. A health centre provides medical attention for mother and child, schoolchildren, and sufferers from a number of diseases. The old workhouse has given way to an up-to-date municipal hospital to which no taint of pauperism attaches. The busy Employment Exchange stands for the role of the central Government in employment problems. Modern school buildings

provide for the child population, and the Elizabethan grammar-school has been transformed into an up-to-date unit in the general educational system. The public library, the waterworks, the playing-fields, and the swimming-pool are only a few of the other examples of how public welfare services have made their mark on the physical appearance of the town of to-day. The local administration of many of these services has added so much to the duties of the town council and its officials that the municipal offices have far outgrown the resources of the old town hall.

The transformation ends with the town of to-day. No man can probe the future and no attempt has been made to portray the town of to-morrow. Much more than a hundred years is needed to efface the results of the sins and errors of the past. Modern Britain still has her slums, her grimy industrial cities, and sick and poor people whose needs are not yet fully met. In the town of to-day public and private effort in combination are steadily and surely carrying through a process of social transformation which, though much has been accomplished, has not yet reached its end.

The three models have been designed under the guidance of the Royal Institute of British Architects.

The Dial of Progress

[C]

On the wall opposite "Changing Britain" the hand of a great clock ticks past the last hundred years, illuminating as it passes some of the more important milestones in social and political progress. The exhibits on either side further illustrate the theme of

“ Then and Now ” ; one side is devoted to education and the other to health and work. In each showcase actual examples as well as pictures of old-time practice are included by way of contrast to conditions of the present day.

The Three Countries [D]

The visitor now passes further into the main hall of the Exhibit and finds himself before a huge map of Great Britain standing out in sharp silhouette against a background of softly changing light, recalling the familiar words of John of Gaunt in Shakespeare's *King Richard II* :

This precious stone set in the silver sea . . .
This blessed plot, this earth, this realm, this England.

The map bears a number of symbolic scenes on its face. There is Westminster, seat of the British Parliament and of the London County Council—two democratic assemblies standing for national and local government respectively ; the scene is encircled, as London is encircled in reality, by low-cost houses built since the war. In other parts of the map the “ dreaming spires ” of Oxford stand for British education, and doctors and nurses for public health, physical fitness is typified against a background of the Welsh mountains, a Government training centre is shown in the industrial North, and in the Highlands of Scotland an aeroplane ambulance illustrates the special public health service of these remote parts.

Next to the illuminated map, in the centre of the hall, are two sections dealing the one with leisure

occupation of mind and spirit and the other with village life—two fundamental factors which help to mould the British national character.

Leisure in Freedom

[E]

In the first of these sections a large panel demonstrates by text and picture how stage and screen, music and the fine arts, literature and the press—all free from political or ideological censorship—combine to mould a free and instructed public opinion. “Leisure’s choicest fruits,” as the caption says, “spring from the soil of freedom.” The British Government does not attempt to control the minds and thoughts of its citizens ; the role of public authorities is to provide and foster cultural facilities of which the citizen is free to take advantage or not. A series of three miniature stage sets illustrates in piquant technique three examples of these facilities—museums and galleries, public libraries, and two world-famed London attractions, the “Zoo” and Kew Gardens.

The treasures of British museums and galleries are second to none ; they include incomparable paintings and sculpture of every period, from the Elgin Marbles onward, relics of the past from the funeral furniture of the Queen of Ur to the dresses worn by Queen Victoria, some of the oldest manuscripts of the Bible, and the aeroplane in which the brothers Wright made their first successful flight.

The free public libraries in Great Britain are the daily resort of thousands of readers of every form of literature, from the deepest works of philosophy to the daily newspaper or the latest novel ; we owe here a

special debt to that great Scot-American Andrew Carnegie, whose generous benefactions to many forms of public welfare in Great Britain include assistance to hundreds of free public libraries.

The "Zoo" (or Zoological Gardens) and Kew Gardens have the chief collections of living animals and plants respectively in Great Britain.

A model of a community centre is shown together with illustrations of what goes on in such centres, including dramatic and musical activities as well as games of physical exercise.

Village Life

[F]

Village life is described in the caption of the exhibit as "a modern pattern woven in an ancient fabric." More of the population lives in towns than in most European countries, but this fact has not destroyed British village life. The clachan in the north of Scotland, the Welsh village with its colour-washed cottages, the half-timbered farm buildings of Herefordshire, the red-brick cottages of Berkshire, the thatched roofs of the West Country—in these and many other districts each village still retains its own peculiar charm. It was a hard task to choose a characteristic village for portrayal, but in the end the organizers of the exhibit have chosen a village in the Cotswolds—on the borders of Oxfordshire and Gloucestershire—where the grey stone houses with their mullioned windows still follow the style set five hundred years ago. The model shows how the modern village, like the modern town, enjoys public welfare services, but in forms specially suited to rural needs. There are new houses

with modern equipment, piped water supplies and electricity, and the apparatus of twentieth-century domestic comfort is being rapidly applied. On the other hand, local arts and crafts continue to put up a spirited resistance to the invasion of machine-made products from the town, and the growth of what is new has not been allowed to impair unduly the beauty of what is old.

The British village has always preserved a genuine communal feeling between men and women in different stations—the squire, the parson, and the schoolmaster, the farmers and shopkeepers and craftsmen, the farm workers and cottagers. This feeling of a village community which is older than feudal times has survived the fall of feudalism and flourishes in the democratic conditions of to-day. Perhaps its best expression is on Armistice Day, when on November 11 the whole village gathers round the local war memorial for a Service of Remembrance. The scene is represented in one of a series of five exhibits on this theme, the other examples being the village flower show and meetings of a village club, a women's institute, and a young farmers' club. All these organizations are explained on the exhibits themselves.

The rest of this section shows photographs of other village activities of all kinds, from maternity and child welfare to the travelling library service.

The Six Wall Bays

The walls of this hall are occupied by six bays dealing with particular aspects of public welfare. There are three on each side, the subjects being as

follows, beginning on the left side as one enters from the direction of Westminster Bridge :

Left Side : New Homes for Old.
Mother and Child.
Children at School.

Right Side : Britain at Work.
Britain at Play.
Social Security.

New Homes for Old

[G]

Good housing is a basic need of every family. Since the World War Great Britain has built more low-cost houses in proportion to its population than any other large country. Four million houses have been built in Great Britain in the last twenty years—enough to house comfortably the entire population of Canada and seven of the adjoining states of the Union. Every third British family lives in one of these new houses, which go on being steadily completed at a rate of a thousand every working day.

The new houses are not like the old rows of little houses in straight, narrow streets which used to be built fifty years ago. Still less are the new houses like the notorious slums which were run up in many industrial areas in the first half of the last century. Built of flimsy materials, crammed together without light or air, damp, insanitary, and overcrowded—for many years even after the World War, the slums remained a menace to the health of their inhabitants and a standing reproach to the conscience of their

fellow citizens. Within the last five years, however, a determined attack has been made on the slums. They are now being swept away at a rate of over 200 houses a day, and replaced by modern low-cost houses.

The new houses are well built, with modern cooking, bathroom and sanitary accommodation. Most of them are in groups of two or four, each house with its own garden. Low-cost apartment houses are only found in the large cities, where workers cannot afford to travel far to and from their jobs. The exhibit shows in diagram form particulars of three types of low-cost houses—the standard type with three bedrooms, a larger type for the bigger families, and, at the other extreme, a special type of bungalow for old couples in the evening of their days.

Over a million of the new houses (including practically all those build to replace demolished slums and to reduce overcrowding) belong to municipal authorities, and are let at low weekly rents graded to the tenants' means—usually between \$2 and \$3 a week, but in some cases, chiefly farm workers' cottages, as low as \$1. These rents are only possible because of heavy subsidies from the central Government (through the Ministry of Health and the corresponding Scottish Department) and from the municipal authorities towards the cost of building and maintaining the houses. Similar arrangements apply to some thousands of houses built by private housing associations. Most of the remaining three million are being bought by their occupiers by weekly payments on the instalment system, mostly with the help of building societies.

Mother and Child

[H]

To twentieth-century ways of thinking no care can be too great for the welfare of the expectant and nursing mother and her child.

The result of modern efforts in Great Britain, in which doctors, nurses, midwives, health visitors, and a host of other public and private workers all play their part, is given in some striking statistics displayed in this bay. To-day only one British mother dies out of every three hundred confinements ; only one baby born alive out of every sixteen is lost within the year ; and only one child dies of measles, scarlet fever, whooping cough, diphtheria, or croup for every three that did so as recently as twenty-five years ago, even after allowing for changes in the birth-rate during that time.

Times have changed. Ancient Greece was not the only country where weakly and unwanted infants were once turned out to die of exposure. As recently as 1843, when Dickens was writing "Martin Chuzzlewit," the typical midwife was Sairey Gamp. This example and others of the bad old times for mother and baby are vividly illustrated in a series of revolving scenes in this bay.

Side by side, by way of contrast, are examples of the British maternity and child welfare services of the present day. They are almost wholly the growth of the past twenty years. Beginning from some private experiments in infant welfare clinics, there is now an organized network of public services throughout the length and breadth of Britain under the general supervision of the central Government (through the

Ministry of Health and the corresponding Scottish Department) and the immediate administration of municipal and county authorities or of private societies receiving grants from those authorities. The services are within the reach of all, and are either free or charged for according to the recipient's means. In order to make this possible the services are financed from municipal and county taxes and through the general grant for health services which is paid to municipal and county authorities by the central Government.

The services include : ante-natal and post-natal centres where the expectant and nursing mother can get examination, advice, and suitable food ; a national midwifery service, which enables every mother in town or country to have a properly trained midwife if she is confined at home ; public and private maternity wards for mothers who have their babies in hospital ; health visitors to advise mothers in their homes about family health problems ; welfare centres where infants are weighed, examined, and treated for minor troubles, and where milk and meals are available ; day nurseries for infants while their mothers are out at work ; and a number of other miscellaneous services. All these supplement and reinforce the traditional ministrations of the private family doctor.

Modern Britain can justly claim to be saving the lives of thousands of mothers, babies, and children through its organized public welfare services, and for each one saved there are many others who are stronger than they otherwise would be. Britain to-day is justly proud of her future citizens.

Children at School

[K]

The educational system in England and Wales consists of two parts, that which is financed wholly or partly from public funds and called the public educational system, and that which is independent of public funds and outside the scope of the public welfare services. Although the former is by far the larger, the latter is not unimportant, as it includes, for instance, the great so-called "public schools."

The model in this Section illustrates the former part only. It shows the main types of schools and colleges belonging to it. The less important have been omitted for lack of space, and for the same reason no attempt has been made to illustrate the differences (mainly of detail) between the English and Welsh system and that of Scotland. The model shows also how children and young persons normally progress from one type to another. The buildings in the model do not purport to be reproductions of actual buildings. Some photographs of actual buildings are shown below the model and the vacant space on the left of the model itself has been used for photographs of typical school and college scenes.

Education is compulsory between the ages of 5 and 14 (after this year 15), and after that voluntary.

No fees are charged in public elementary schools (i.e. infant, junior, and senior schools). In other schools and colleges provided or aided from public funds some part of the cost of education is met from fees, and students of proved ability who require assistance in paying them are assisted according to their needs.

Children normally enter the infant school at 5, pass on to the junior school at about 8, and stay there till about 11. Here comes the first great choice. Those children (about one out of every seven) whose parents wish them to receive a secondary education and who pass the necessary test of ability go on to secondary schools and the others to senior schools.

Senior school children normally stay there for the remainder of the period of compulsory education, except those (about three per cent.) who, after passing a test of ability, proceed to junior technical schools at about 13. These schools, which exist only in certain places, provide a combination of general education with specialized preparation for a particular industry or occupation, generally covering a period of two years.

Secondary school pupils mostly leave at about 16 after taking the School Certificate Examination. Some, however, stay on until about 18, and the leavers at this age include those who go on to a university. About one-fifth of all passing through secondary schools go on to a university, teachers' training college, or technical college.

Both in town and country a large and increasing number of students of all ages attend evening classes, some to improve their knowledge and earning power and others for cultural or recreational purposes.

Britain at Work

[L]

The British public welfare services protect workers at all stages of their working life. For the young person about to make his first start in industry, they

help him and his parents to choose his career and find him a job in his chosen occupation. If the prospects in his home town are meagre, they help—if he and his parents are willing—to find him a job in a more promising area and move him there ; and they keep in touch with him and help him until he has settled down and can fend for himself.

For those in search of work there is a nation-wide employment exchange service which brings together the employer needing staff and the man requiring work. The service is free to all, quick, and efficient. The employer is offered a careful selection of workers fitted to his particular needs ; the worker can be told of suitable jobs available for him near his home or away from home, and spared the hardships of an undirected search for work. The worker in certain areas offering poor prospects of a satisfactory amount of employment can be found a job in a more promising area and assisted to move, with his belongings and family, and to settle there. Those who have not a satisfactory footing in industry can be given intensive training in a variety of occupations ; or, if they are suffering from long unemployment or lack of minor medical treatment, can be restored to good condition so as to be able to hold a job when one is found.

Industrial relations and the regulation of wages and hours of work rest upon solid foundations of good sense and good will. Workers and employers in many trades are strongly organized, and of their strength has been gradually fashioned voluntary machinery for the peaceful settlement of wages and working conditions. The State interferes only when voluntary efforts are immature or have failed to safeguard the

rights of both sides, and then only in such a way as to preserve the principle of self-government.

Except in special cases, notably coal-mining and road haulage, the hours of work of adult men are not controlled by law, but are left to be dealt with by agreement ; the hours of women and young persons are, however, extensively controlled by legislation. There is also legislation designed to secure safe and healthy working conditions for the worker in manufacturing and certain other operations.

Britain at Play

[M]

“ A healthy mind in a healthy body ” was the old Roman prescription for happiness. Intellectual and æsthetic interests have already been dealt with in another part of the Public Welfare Section (see Section E) and our tour has now brought us near it once more, as we study the bay which shows the British interpretation of “ the healthy body.”

English has given the word “ sport ” to many other languages. Moreover, an astonishing number of the games now played everywhere in America and Europe originated with one or other of the English-speaking peoples ; this is true of organized football, baseball, cricket, lawn tennis, and golf, to name no other examples.

Some games and pastimes are specially associated with the different countries of the United Kingdom, and the exhibit includes scenes from them on this basis. British football has two forms—Association (“ soccer ”), in which the ball must not be handled, and Rugby (“ rugger ”), in which it can be. Cricket is as popular

in England as baseball is in America. Many people, however, would say that the characteristic English sport was fox-hunting, which is still pursued as in the days of John Peel and Surtees. To Scotland belongs the honour of having invented golf; and another characteristic pastime of the northern kingdom is the Highland Games, which include piping, dancing, and tossing the caber (the stem of a fir-tree), as well as more ordinary athletic contests. For Wales, again, the example chosen is rather cultural than athletic—the Eisteddfod, which is chiefly marked by competitions in music and poetry in the Welsh language.

But the British do not confine their outdoor amusements to these. There are very few forms of sport which do not have a strong following among them, whether team sports like rowing (who has not heard of the Oxford and Cambridge boat-race?) or man-to-man contests like boxing and wrestling, whether organized classes of physical education or less formal activities like walking (“hiking,” as it is called) or cycling or swimming or climbing, whether the joys of a crowded seaside resort or of fishing all by oneself and away from one’s fellow men. Examples of various outdoor activities like this appear in succession in the exhibit. Other examples not illustrated include “baiting the Government”—a form of amusement which is still retained and valued in Great Britain.

Something like half the working population now enjoy annual holidays with pay, as a result of friendly agreements between workpeople and employers, and the proportion is rapidly growing.

The significant point is that Englishmen and Scotsmen and Welshmen can choose their form of

amusement for themselves. Government and other public authorities do not prescribe it for them—their role is to see that facilities exist wherever they are wanted by encouraging their provision with grants of money or, as with public playing-fields and swimming-pools, by themselves providing the facilities for the public to use. The British like to enjoy their sport their own way, not the Government's way.

Social Security

[N]

Thirty years ago nothing stood between most * British workers' families and financial disaster when the breadwinner died or became unable to follow his job through trade conditions, sickness, or old age—nothing, that is to say, except scanty savings, private charity, and Poor Law relief which it was felt degrading to receive.

To-day the position has been revolutionized. The great bulk of the working population of Great Britain is covered by three great schemes of compulsory national insurance, controlled by the central Government. *National Health Insurance* provides free medical attention, free medicine, and fixed weekly cash payments while the worker is off the pay-roll as a result of sickness or disablement, together with a single cash payment when the worker's wife, or the woman worker (if she is insured), is confined. *Unemployment Insurance* provides fixed weekly cash payments for the unemployed worker, his wife, and dependent children. *Contributory Pensions* provide fixed weekly

* A minority belonged to private benefit societies.

cash payments for the widow, dependent children, and orphans of an insured worker after his death, and for himself and his wife when first he and then she reaches the age of 65.

All three schemes are administered on the same principles as private insurance, with one exception, that membership is compulsory for the great bulk of employed workers below a certain standard of income ; consequently, no one in an insurable occupation may stand out, but, on the other hand, no " bad risk " is kept out. The insurance funds out of which the benefits are paid are derived, in each of the three schemes, from three sources :

- (i) a fixed weekly contribution made by the employer for each worker ;
- (ii) a fixed weekly contribution made by the worker ; and
- (iii) a fixed contribution made by the central Government out of the national revenue.

Each worker has " insurance cards " to cover these schemes, and items (i) and (ii) are paid for by buying special stamps at a Post Office and fixing them week by week on the card. The employer has to do this and deducts the amount of item (ii) from the worker's wages.

Thus workers, employers, and the general body of taxpayers all have a financial interest in keeping the schemes on sound lines. The unemployment and pensions schemes are directly administered by the central Government ; the detailed administration of the Health Insurance scheme is generally speaking in the hands of " approved societies "—mostly the old friendly and benefit societies.


The main part of the Social Security Bay is a symbolic moving diagram showing how the three parties contribute to the national insurance schemes and the benefits which flow from them. Actual specimens of the cards and stamps used are also shown.

Unemployment insurance nowadays has no resemblance to a "dole." Workers who through long unemployment have exhausted their benefits under the scheme just described are no longer eligible for further payments from the fund. They may, however, receive, according to their household needs, "unemployment assistance" from the Unemployment Assistance Board, which is financed entirely by the central Government, and beyond this there remains as a last recourse the provision of "public assistance"—the modern humanized version of the old "Poor Law." Reference to both these assistance services is included in the Exhibit. In addition, men and women over 70 who are not entitled to old-age pensions under the contributory scheme described above are eligible for old-age pensions of varying amounts, subject to an income test.

To complete the story it should be mentioned that under English law the employer is, broadly speaking, made responsible for paying compensation when a worker is killed or injured by an accident at work.

The display work in the Public Welfare Hall is by Mr. Misha Black.

Maritime Hall

 ON leaving the Public Welfare Hall the visitor enters the Maritime Hall and looks down upon a large map of the world where, displayed upon the ocean surfaces, are over 9,000 small models of ships representing the extent of British mercantile shipping. The oceans are constructed of glass with an arrangement of light to give the effect of movement. The land surfaces are made of copper.

On one side of the Hall is a series of models designed to illustrate the development of British transatlantic shipping during the past century. The models include the four vessels which first crossed the Atlantic under steam power : the *Sirius*, *Great Western*, *Britannia*, and *Great Britain*.

The small paddle steamer *Sirius* was the first vessel to cross the Atlantic under continuous steam power. She was built of wood in 1837 by Robert Menzies & Son, of Leith, for the service between London and Cork of the St. George Steam Packet Company, which eventually became the City of Cork Steam Packet Company.

Although never intended for the Atlantic service, this little cross-channel steamer was chartered by the newly formed British and American Steam Navigation Company and despatched from Cork Harbour to New York in April 1838. Under the command of Lieutenant R. Roberts, R.N., the *Sirius* left London for Cork Harbour, where she coaled, leaving on April 4 with forty passengers for New York, where she arrived on April 22, her average speed for the crossing being

6·7 knots. She was closely followed by the paddle steamer *Great Western*, which arrived the next day.

The paddle steamer *Great Western* was the first steamer constructed specially to cross the Atlantic. She was built of wood at Bristol in 1837, by Mr. Patterson, for the Great Western Steamship Company, to the plans of Mr. I. K. Brunel, F.R.S. Her first crossing of the Atlantic was accomplished in April 1838, and fully demonstrated the practicability of ocean steamship transport.

To enable the vessel to resist the action of the heavy Atlantic waves, she was constructed with great longitudinal strength. The ribs were of oak, and of scantling equal to that of contemporary line-of-battle ships. The saloon, which was the principal apartment in the ship, was 75 ft. long, 21 ft. wide, and 9 ft. high, and is stated to have been the largest and most luxurious room provided in any vessel of the period. There was accommodation for 120 first-class passengers and 20 second-class, but, if necessary, sleeping berths for a further 100 passengers could be provided. The crew consisted of 60 officers and men, so that a total of 300 persons could be accommodated.

The *Great Western* left Bristol for her first crossing of the Atlantic on April 7, 1838, three days later than the *Sirius*, and arrived in New York Harbour on the morning of April 23, only a few hours after the *Sirius*. The time occupied was 15 clear days, the average speed for the entire crossing was 8·2 knots, and the best day's steaming 243 miles.

The paddle steamer *Britannia* was the first vessel owned by the Cunard Steamship Company. Built of wood at Greenock, in 1840, by Robert Duncan &

Company, she was the first of four sister ships to establish a monthly transatlantic mail steamship service from Liverpool to Halifax and Boston, subsidized by the British Government.

The *Britannia* was a two-decked barque-rigged vessel, built with a square stern and clipper bow. On the upper deck provision was made for the officers' quarters and the galley ; there was also a shelter for cows, which were carried in order to ensure a supply of fresh milk. The passenger accommodation consisted of the dining-saloon and cabins for 115 persons on the main deck below.

The *Britannia* left Liverpool for her first crossing of the Atlantic on July 4, 1840 ; she arrived at Halifax in 11 days 4 hours, and completed her run to Boston in 14 days 8 hours. A contemporary newspaper account states that " the fine vessel is so large that it was necessary to swing her out into mid-stream (the Mersey) and place her passengers aboard from a tender owing to her immense size." The return crossing was made in a little over 10 days, the best steaming having been 280 miles in a day.

The S.S. *Great Britain* was the first large vessel to be built of iron, and was also the first screw steamer to cross the Atlantic. She was built by the Great Western Steamship Company at Bristol in 1839-43, to the designs of Mr. I. K. Brunel, F.R.S. It was originally intended to fit her with paddle-wheels, but while she was still under construction the design was altered to adapt her for screw propulsion. The vessel was floated on July 19, 1843, but did not run her trials until December 1844, when she attained a speed of 11 knots.

On July 26, 1845, the *Great Britain* left Liverpool for

New York, carrying some 60 passengers and 600 tons of cargo. The passage took just over 15 days, an average speed of 9.3 knots being maintained, while her engines indicated 600 h.p. The return voyage was made in 14 days, the best day's run being 287 miles.

For comparison with these early vessels there is in close proximity to them a model of the latest achievement of British mercantile design and construction, the *Queen Elizabeth*, which, like her sister-ship the *Queen Mary*, will complete the trip from England to America in under four days. The *Queen Elizabeth* was launched on the Clyde by Her Majesty the Queen on September 27, 1938.

On the opposite side of the hall are models of other examples of modern British shipbuilding—*Circassia* and *Cilicia*, *Monarch of Bermuda*, *Capetown Castle*, *Strathnaver* and *Strathaird*, and *Empress of Britain*.

On the further side of the large map of the world are showcases containing the following charts and documents, lent by the Antiquarian Booksellers' Association (of London), and dating from the early days of transatlantic navigation and exploration :

Sir Francis Drake

ORIGINAL MAP, ILLUSTRATING HIS WEST INDIAN VOYAGE OF 1585-86

This famous map, engraved by Battista Boazio almost immediately after Drake's return to England, is extremely rare. Sir Francis Drake sailed from Plymouth on September 14, 1585, with a fleet of twenty-five vessels. Sir Martin Frobisher was his vice-admiral and Francis Knollys his rear-admiral. After many adventures they reached the coast of Florida

(then a Spanish possession), and pursued their way to the northward, until, in compliance with their orders, they reached the Virginian colony. They returned to England, reaching Portsmouth on July 28, 1586.

Old English Sea-Charts

Three examples are shown of original navigators' maps, prepared for the use of English seamen by Nicholas Comberford, "in Ratcliffe Highway, at the Signe of the Platt," between the years 1650 and 1657.

Original sea-charts are now rare, and the examples shown are, apart from their great geographical interest, of fine decorative quality. As they were primarily intended for the use of seamen, they give fuller details of coast-lines, islands, shoals, and sand-banks than of interior regions, the space for the latter being used to enhance the beauty of the map.

The first is a Portulan Chart of the Atlantic Ocean, including the coast-line of New York State, copied from Henry Hudson's lost map. Manhattan Island is marked in gold. The map shows also Canada ("Nouvelle France"), New England ("Nova Anglia"), Maryland, Virginia, and other countries in both hemispheres.

The Portulan Chart of the Island of Hispaniola or Haiti is a fine and picturesque marine chart of the type used by the buccaneers who inhabited the island at this period.

The chart for the navigation of the coast of North Carolina from Cape Fear to "Dennis Island," possibly the earliest Portulan Chart of this locality, was executed six years before the grant of the Charter to Lord Clarendon and others for the foundation of the colony.

Sir Walter Raleigh

ORIGINAL ROYAL WARRANT RELEASING HIM FROM THE TOWER OF LONDON TO PREPARE FOR HIS LAST VOYAGE TO AMERICA, JANUARY 30, 1616 (N.S. 1617), ON PARCHMENT, WITH PRIVY SEAL

In 1603 Sir Walter Raleigh was sent to the Tower for conspiring against James I, and remained there until the beginning of 1617. About 1610 he sought permission to make another voyage to Guiana, and with the assistance of his friends succeeded in obtaining the release embodied in the document shown. Raleigh had promised to find gold in Guiana, and the King favoured the expedition. Raleigh sailed on March 17, 1617, but after great privation the expedition was unsuccessful, and in 1618 he returned home. He was arrested and was executed on October 29, 1618. The following is an abridged transcript of the Warrant :

“James, by the Grace of God King of England, Scotland, Fraunce and Ireland, Defender of the Faith, etc. To our trusty and well-beloved Sir George More, Knight, our Lieutenant of our Tower of London, greeting. Whereas Sir Walter Raleigh, Knight, having been heretobefore by order of our Lawes convicted and attainted by high treason by him committed against us and our States, since which tyme, through our princely clemence, wee, forbearing to execute uppon him the penaltie of our lawes, have notwithstanding continewed him prisoner in our said Tower, where he still remaineth as prisoner in the custody of you our Lieutenant there. . . . Now wee, out of our princely compassion, being graciously pleased that the said Sir Walter Raleigh shall be noe longer continued prisoner in our said Tower, but forthwith be fully enlarged and delivered out of the same, in hope he maie and will prove serviceable to us and our State.”

ORIGINAL LETTER ENTIRELY IN HIS OWN HAND
RELATING TO HIS LAST VOYAGE TO AMERICA,
JULY 1, 1616

This letter is written in the handwriting which Raleigh used in his "Journal" of his last voyage, and is one of the most important documents in relation to that voyage. On his release from the Tower of London for the purpose of making a voyage to Guiana in search of gold, he immediately began his preparations, in the course of which he wrote this letter to Sir Peter Vanlore, a naturalized Dutch merchant with whom he had been in contact for many years.

The letter was sent with a covering note to Sir Peter Vanlore asking him to copy the letter to his brother in Amsterdam. The letter requests the brother (or brother-in-law) to approach a merchant in Amsterdam with a view to his furnishing Sir Walter Raleigh with important information relating to certain merchandise to be obtained in Guiana, a part of such merchandise, "the charges being deducted," to become the property of the merchant.

Submarine Cables

In one section of the Maritime Hall will be found a Submarine Cable Exhibit representing a most important link between the United States and the United Kingdom. The first and last Atlantic cables respectively uniting the two countries were laid by the *Great Eastern* in 1866 and by the *Dominia* in 1928, models of which are shown.

The development of world cable communications since 1866 is graphically displayed in an illuminated

MARITIME HALL

map, and the laying model gives a good conception of the vast depths in which a cable ship has to work.

The raw materials for submarine cables are collected from all parts of the world, and pictures, samples, and sections representing the whole industry stage by stage are shown.

The Maritime Hall has been organized with the co-operation of the Chamber of Shipping in London and the Liverpool Shipowners' Association, and the Submarine Cable exhibit was prepared by Submarine Cables Ltd.

The display work is by Mr. Misha Black.

Attractions of Britain Hall

FROM the Maritime Hall the grand staircase leads down to the Attractions of Britain Hall. Facing the steps and dominating the whole vista of the first floor of the Pavilion is the great figure modelled by Mr. Maurice Lambert, and symbolizing the friendliness, love of peace, and strength of Great Britain.

In the main body of the Hall are eight vertical frames each containing three large photographs of places or incidents of interest in the United Kingdom. Here those who have already visited the British Isles will doubtless find many old friends : a view of the Houses of Parliament showing the " Big Ben " tower ; Trafalgar Square with the Nelson monument ; a busy scene in Oxford Street ; Windsor Castle ; Hampton Court Palace ; Canterbury Cathedral ; and other places of historic interest. The English countryside also has not been forgotten. Photographs will be found of English village scenes as well as views of mountain and coast scenery in England, Scotland, and Wales, including the Giant's Causeway in Northern Ireland. Pageantry is also represented, with scenes such as the Opening of Parliament, and sport by views of Henley Regatta, the " Derby " at Epsom, and the gathering of the clans for the Highland Games at Braemar in Scotland.

On each side of the Hall are recesses containing models of LINCOLN CATHEDRAL in England, STIRLING CASTLE in Scotland, CAERNARVON CASTLE in Wales, and CARRICKFERGUS CASTLE in Northern Ireland. The

lighting of the models is varied so that they appear alternately as seen by daylight and as though floodlit at night.

Lincoln Cathedral

LINCOLN, one of the most ancient cities of England, and capital of Lincolnshire, is situated on the Witham, 42 miles south of Hull and 130 miles north of London. Its cathedral, one of the finest in England, is mainly Early English in style, though containing examples of every period of Gothic architecture. Notable features are the central tower (1235–1311), the two western towers (completed 1450), the west front (partly Norman), the Galilee or south porch (c. 1240), the decorated choir (1254), and the decagonal chapter-house (c. 1225), in which several of the earliest meetings of the English Parliament took place (*temp.* Edward I and Edward II). The cathedral possesses an original manuscript of Magna Carta which, by the courtesy of the Dean and Chapter, has been lent for display in the British Pavilion, where it may be seen in the Magna Carta Hall.

Stirling Castle

STIRLING, the county town of Stirlingshire, Scotland, is situated on the right bank of the Forth, about 39 miles north-west of Edinburgh and 29 miles north-east of Glasgow. The older town is on the slope of a hill which is crowned by the castle, dating from remote antiquity, though most of the existing buildings were

erected by the Stuart sovereigns, who used it as a royal residence. These include James III's parliament-hall, a palace built by James V, and the chapel-royal rebuilt by James VI (James I of England).

Caernarvon Castle

CAERNARVON, the county town of Caernarvonshire, North Wales, is near the south-western end of the Menai Straits, separating Anglesey from the mainland, about 69 miles west of Chester. Its castle was begun for Edward I, who created his infant son, Edward (afterwards Edward II), born here in 1284, the first Anglo-Norman Prince of Wales, in succession to the native princes whom he had deposed. Edward III in 1343 similarly invested his eldest son, Edward the Black Prince, with the principality, and from that time the title of Prince of Wales has been borne by the eldest son of the reigning sovereign, the last investiture having taken place at Caernarvon with great historic ceremony in 1911.

Carrickfergus Castle

CARRICKFERGUS is an Irish seaport town situated on the north shore of Belfast Lough and on the south-eastern border of County Antrim, $9\frac{1}{2}$ miles north-east of Belfast. Its castle, which stands on a rock projecting into the sea, is reputed to have been founded by John de Courcy in the twelfth century, at the time of the partial conquest and settlement of Ireland under Henry II.

Travel Enquiry Bureau

On one side of the Hall is an Enquiry Bureau, organized by the Travel and Industrial Development Association of Great Britain and Northern Ireland in collaboration with the British Railways. Here enquiries will be welcome from those who are contemplating a visit to the British Isles. A telephone is available for their use and accommodation is provided for writing and consulting the pamphlets to be obtained in the Bureau.

British Architecture

On the opposite side of the Attractions of Britain Hall is a section devoted to British architecture, organized in co-operation with the Royal Institute of British Architects in London. The exhibits in this section give a comprehensive view of the types of modern building now being erected in Great Britain.

Gallery

A Gallery around the Attractions of Britain Hall, approached directly from the Maritime Hall, is devoted to industrial exhibits relating to woollen goods, Irish linen, fine china, and leather.

The display work is by Mr. Misha Black and Mr. C. Allenbruck (Irish linen).

Fine Woollens Exhibit

For over a thousand years—since the far-off days when an “Imperial Weaving Manufactory” established by Roman colonists at Winchester was reputed to produce cloth “delicate as the finest spider’s web”—British woollens have been known and prized throughout the world.

From the north and west of England, from Scotland, from Northern Ireland come many different types of wool material, each distinctive, each with its own particular qualities, each embodying the traditions of the district in which it is produced.

To-day Yorkshire is particularly proud of the quality of its fine worsteds, and can claim to have first put the British wool industry on to a modern commercial basis; Scotland has its Cheviot and black-face sheep, which give us the famous tweeds, saxonies, and homespuns, as well as ladies’ dress goods, distinguished alike by a delightful spontaneity of pattern and colouring and by the solid strength of the material itself; the West of England manufacturers produce renowned flannels and riding cloths. Hand-loom weaving is still carried on in the Islands of Harris,

Lewis, and Shetland. Excellent homespun come from the pastures and mountains of Northern Ireland, where the wool of the small hardy Irish sheep favours the production of rough, sturdy fabrics. Every wool-growing and wool-weaving district of Great Britain and Northern Ireland has its own tradition and its own record of quality and workmanship.

Irish Linen Exhibit

The story of Irish linen is the story of an age-old industry which had its first beginnings in ancient Egypt and which has had its roots in Ireland since at least the thirteenth century.

Those who have visited Ireland and have seen its mountains, its loughs, and its people may have seen also crofters' wives sitting before their cottages using spinning wheels which bear the indelible mark of time, and may have thought, as many before, "This is a relic of another age and has no place in modern times."

It is in certain respects a survival—but it is a survival in which the best of skilled craftsmanship has amalgamated with modern methods. In no better way can the Irish linen industry be described than by saying that in this mechanized age it is one of the few remaining industries where man is still master over the machine. The machinery is there through virtue of an ever growing demand for a first-class product, but it is upon the skilled work of men and women whose craft has been handed down from generation to generation that the quality of the cloth depends.

In many processes, moreover, the machine has no place. It is of the utmost importance if the superfine

finish of Irish linen is to be maintained that such processes as combing should be carried out with the greatest care. Side by side with the machines, too, one will find girls drawing threads by hand or plying their needles industriously and skilfully. Where hand embroidery is required, the design is stamped, and the cloth is then sent to the country districts where the embroidering is carried out carefully by women who have inherited their skill from earlier generations.

It is not necessary to describe the various processes from which emerges the "queen of fabrics" as they are demonstrated in the Irish linen exhibit. There may be seen on the one hand photodioramas of these processes housed in nine giant pirns, and on the other hand the various uses to which Irish linen is put, from shirts to towels, from handkerchiefs to bedroom furnishings.

The exhibit has been arranged by the Irish Linen Guild on behalf of the Irish linen industry.

Fine China Exhibit

Of all the major contributions that England has made to ceramics nothing has proved of greater or more lasting importance than bone china ; it has the rare facility of seeming equally precious whether decorated with colour or left in the white. It is a thing of beauty in itself. Decoration in colour, however, has done much to enhance that beauty, as will be seen from the representative collection of wares here displayed.

Bone china combines the glory of K'ang Hsi with that of late eighteenth-century Sèvres ; yet, withal, it

retains an individuality of its own. It is the porcelain *par excellence* of to-day and of to-morrow.

To the interested it may be said that bone china derives its name from the use of calcined bone, which is added to the china clay and china stone. The Chinese are reported to have a saying that china stone and china clay are the bones and flesh of porcelain. If this be so, surely it is not too fanciful to suggest that bone ash endows the material with the third and most necessary attribute, life.

The firms contributing to this collection of bone china wares are six in number and are known collectively as the English Fine China Manufacturers. Each firm has distinctive qualities of its own both in body and in decoration. It is hoped that the opportunity thus offered of contrasting the different styles, some traditional and others of a more modern tendency, will be appreciated by American lovers of bone china.

Spode Fine China

First produced in 1795, it remains a recognized formula for the finest china produced to-day. "Spode" is renowned for the hard, velvety glaze produced on this durable fine china, and the rich artistic designs show the highest craftsmanship.

Royal Crown Derby

The world-famous Derby Red, Blue, and Gold designs are an outstanding feature, these having been continuously produced for over 150 years. Crown Derby china covers a wide variety of designs, and includes many reproductions of patterns in the Derby tradition.

Royal Doulton

Specially famous for unique colour effects—Flambes, Chang, Sung. Colourful figurines representing characters from the Age of Romance; tableware distinguished by the rich ivory tone of its fine bone china. Pottery representing Dickens and other Old English characters have a quaint and lasting appeal. The highest awards have been given by International Adjudicators.

Minton

Founded by Thomas Minton in 1793. Since that time it has been successful in securing premier awards at the Great International Exhibitions, while the family succession and the Minton tradition of craftsmanship have remained unbroken throughout the years.

Wedgwood

Founded by Josiah Wedgwood, F.R.S., in 1759 and is carried on to-day by his direct descendants. Wedgwood wrote to his partner, Bentley—"I have given you my idea of the best plan for making *perfect Porcelain*." Fine china was first made at the Etruria Works in 1812.

Royal Worcester

Founded by Dr. Wall in 1751. The perfection of body and excellence of design which characterized Royal Worcester from its foundation were recognized over a century and a half later by the high Awards given to it at the Chicago Exhibition in 1893.

Leather Exhibit

The exhibit of British leather has been designed to demonstrate the quality and attractiveness of some of the best-known British specialty leathers. Twelve manufacturers have co-operated in its construction, and their exhibits demonstrate the extent to which present-day leathers cater for the most exacting modern tastes.

Several of the exhibits show the variety of colours in which various types of leather can be produced, as, for example, the suede sheep leathers for clothing, the skivers and other light leathers for fancy goods. Natural-grain shumac-tanned moroccos for upholstery and interior or mural decoration are shown. These are tanned exclusively with pure shumac, and therefore do not decay in industrial atmosphere nor darken under the influence of light. Hide leather for upholstery in the home, public buildings, motor cars and wall-panelling is also shown. Leather of this type is used in the London, Midland, and Scottish "Coronation Scot" train, on exhibition at the World's Fair. It can be seen in the dining-saloons, cocktail lounge, and in the club saloon.

Box calf and chrome side leather for shoe uppers are exhibited, including several branded leathers which are widely used throughout the United States in the manufacture of footwear and sports shoes. Many of these have certain outstanding characteristics, such as attractive grains and water-resisting qualities. Other types of upper leather illustrated are made of calf, goat, and all classes of reptile. Woolled sheepskins made up in the form of rugs and slippers provide

an attractive feature of the exhibit. Pigskin leathers for luggage and fancy leather goods are shown, and also a wide range of shoe-lining leathers in calf, goat, and persians, and buckskin and mock buck for riding-breeches, shoes, and military equipment.

Several varieties of glove leathers are to be seen, amongst them deer, East India sheep, white and cream washables, and imitation peccaries.

The Hall of Metals



OUR great industrial civilization, the World of To-day, is based upon mechanical progress. The efficiency of the machines which serve us and which carry civilization forward depends partly upon human inventiveness and ingenuity, but even more upon the materials at the inventor's service.

Improvements in the production of metal which originated less than two hundred and fifty years ago underlie all this. Discovery, research, and invention have bit by bit released greater and greater forces for the service of mankind. Each decade of progress in metal production has meant more to the world than a century had done previous to 1700.

The Hall of Metals demonstrates this progress. Its most prominent feature is a six-sided structure each face of which portrays one of the successive progressive steps forward in the production of iron and steel—contributions which Great Britain has made to world development.

The torch, once kindled, has passed from hand to hand. All nations have shared in the great work of progress, from the moment when the industrial age was born in the transference of the primitive iron-works of the Sussex forests to the coal-fields of the North.

It is neither possible nor suitable in an exhibition to attempt more than the briefest outline of the idea, or to make more than the briefest reference to metals other than iron and steel. The same processes of

research and advancement have been taking place over the whole field of metallurgy. Just as cheap and plentiful iron made the industrial age possible, so are a vast variety of new alloys, new productive methods and treatments in metallurgy throwing open the gates of the World of To-morrow.

To understand the Hall of Metals it is desirable first to examine its central "theme" feature.

The Hexagon

PANEL I

The quaint archaic picture at the left shows all the processes of iron-winning and working as known in 1650. It is reproduced from an engraved clock-face of that period, and shows how little primitive processes had improved since the dawn of civilization.

Crude and slow, these early methods permitted the production of iron and steel only in small quantities and of uncertain quality.

The application of mechanical invention was limited by the quality of available material.

Modern mechanical progress was impossible until iron and steel of consistent quality could be produced cheaply and in quantity. Modern civilization thus began in the iron-works of England only 200 years ago.

Annual World Production

1740	..	70,000 tons (approximately)	Iron
1837	..	2,400,000 „ „	Iron
1937	..	133,000,000 „ „	Steel

PANEL II

Abraham Darby 1711-1763

Before 1735 iron ore was smelted by charcoal fuel. Great forests were destroyed to provide the wood from which the charcoal was made. Iron remained a comparatively rare and expensive metal.

Following development work between 1620 and 1657 by DUD DUDLEY, ABRAHAM DARBY of Colebrook Dale, Shropshire, introduced in 1735 a practical system of smelting with coal as fuel. This freed the metal from the limit set by dwindling forests and gave industry cheap and plentiful supplies of iron. The steam engine and other machinery became generally available.

It has been said : “ Abraham Darby was the High Priest at the marriage of coal and iron, which gave birth to the Industrial Revolution.”

PANEL III

Henry Cort 1740-1800

Though cast-iron had become relatively cheap and plentiful, it was still hammered and wrought by the primitive tilt hammer.

In 1783 HENRY CORT of Fontley, Hampshire, patented a process for producing iron bars by forcing the metal between grooved rollers. Cort's rolling mill could produce bar iron fifteen times as fast as the old tilt hammer.

The process led naturally to the introduction of rollers with shaped grooves and the production of bars of various sections for special purposes, and thus to the modern rolling mill.

In 1784 Cort introduced the puddling furnace for producing wrought iron more quickly and cheaply.

PANEL IV

James Neilson 1792-1865

Cold air had been pumped into primitive furnaces and cold air was still employed a century ago. Since the operation in winter was better than in summer, it was thought that the colder the blast the better.

In 1828 JAMES NEILSON of Glasgow completely reversed this ancient practice. He discovered that to preheat the blast of blast-furnaces resulted in a great saving of fuel.

By 1833 he had perfected methods of heating the air to 615° Fahrenheit and thereby reducing the amount of fuel used by 70 per cent. Thus iron was still further cheapened.

PANEL V

Henry Bessemer 1813-1898

Although iron had been made cheap and plentiful, steel could still be produced only in crucibles holding about 50 lb. each, at a cost of approximately \$290 per ton.

In 1856 SIR HENRY BESSEMER, of London, invented a process of reducing the carbon by blowing air through molten cast-iron and thereby producing steel in quantity. It became cheaper even than wrought iron, which it largely replaced.

The Bessemer process has been largely replaced by the open-hearth furnace developed from the regenerative furnace first built by SIR WILLIAM SIEMENS

of Birmingham in 1865. About 75 per cent. of all steel is now made in it.

Further progress in steel production was made by THOMAS (1850-1885) and GILCHRIST (1851-1935), who invented the basic process in 1879 which enabled ore containing a high percentage of phosphorus to be used.

This brought into commercial productivity great mining areas in which the proportion of phosphorus had been too high to allow of treatment before.

The magnitude of the modern steel industry was rendered possible by this invention.

PANEL VI

Michael Faraday 1791-1867

Robert Mushet 1811-1891

Robert Hadfield 1858

Between 1819 and 1824 MICHAEL FARADAY conducted the first experiments in improving steel by alloying it with other metals. The first alloy steel of practical use was patented by MUSHET of Sheffield in 1868. It was the first "high-speed steel," so called because tools could be made of it capable of cutting metal at speeds 50 per cent. greater than formerly possible.

SIR ROBERT HADFIELD, of Sheffield, in 1882 invented his manganese steel, combining great hardness with ductility. It is the principal steel for such purposes as railway crossings, rock crushing, dredging, and all purposes involving resistance to abrasion. He also invented silicon steel, which has so improved the efficiency of electrical machinery that its introduction saves hundreds of millions of dollars per annum in electric energy otherwise wasted.

Primitive Iron

On either side of the Hexagon are exhibits showing the earliest and latest developments of steel. To the right as one faces PANEL I is a collection of century-old Sussex ironwork, mainly the furnishing and equipment of a fireplace. The fireback bears the initials of King Charles II and dates from his reign.

The roasting jacks, pot cranes, and other articles are of various dates between that period and the beginning of the eighteenth century.

It will be noted that there is surprising ingenuity in some of the mechanical contrivances for saving labour to the cook, and that the craftsmanship in most cases is wonderfully fine, especially considering that work of this kind was carried out by the village blacksmith and almost always by eye and without the aid of any mechanical contrivances.

At the back of the fireplace are shown two old guns. The first is a very interesting piece which was salvaged one hundred years ago from the wreck of the *Mary Rose*, which was sunk off Portsmouth on July 18, 1545. It has been lent by His Majesty's Armouries from the collection in the Tower of London. This shows very clearly the original method of manufacturing cannon. They were made on the same principle as a barrel ; of long "staves" of wrought iron over which thick hoops were shrunk, which both held them together and gave them the requisite strength.

It is interesting to observe that these early cannon were breech-loaders. The breech, or chamber, is separate from the barrel of the gun and was removed for loading.

Beneath this old gun is a "carronade." These were practically the first "standardized" guns to be cast, and were a leading part of the armament of the eighteenth-century navy. They were also among the first products of coal-smelted iron as introduced into Scotland in 1778 by the famous Carron Company.

Stainless Steel

On the left this show of ancient ironwork is balanced by the display of stainless steel—the last great advancement in steel development with which the public is familiar. Its original invention and many subsequent improvements have taken place in the Brown-Firth Laboratories in Sheffield. The value of a metal which combines great strength with resistance to corrosion hardly needs emphasis. Everyone is now familiar with the numerous domestic uses to which stainless steel is put. It is, however, of much greater value in numerous industries for purposes for which iron or steel had previously been useless owing to rust and corrosion.

"Thunderbolt"

Immediately facing PANEL I of the Hexagon, and in the centre of the main passageway across the Hall of Metals, is the world's fastest MOTOR-CAR accompanied by models of two other record breakers—the fastest MOTOR-BOAT and the longest non-stop flight AEROPLANE.

"Thunderbolt" is the holder of the world's land speed record at 357·5 m.p.h., mean average both ways

over the measured mile, driven by Captain G. E. T. Eyston on the Bonneville Salt Flats, Utah, on September 16, 1938. It achieved the fastest speed ever recorded on land over the kilometre in one direction, 359.64 m.p.h. The car is 34 ft. 10 in. long, 7 ft. 11 in. broad, and 4 ft. 10 in. high, weighs over 6 tons, and is fitted with two Rolls-Royce 12-cylinder engines developing over 2,000 h.p. each at 4,000 feet altitude. On the first gear the speed is 70 m.p.h., on the second 200 m.p.h., and the car has already exceeded 360 m.p.h. or 6 miles per minute on top gear.

The "Thunderbolt" is entirely a British product.

"Bluebird"

This motor-boat, driven by Sir Malcolm Campbell, M.B.E., achieved the world's record of 130.94 miles per hour on Lake Maggiore on September 17, 1938 (130.94 miles per hour = 113.75 knots). It is fitted with a special 12-cylinder Rolls-Royce aero engine of 2,150 b.h.p.

The length of the actual boat is 23 ft. and her beam 9 ft. 6 in.

The propeller is geared up and runs at approximately 9,000 revolutions per minute at full speed.

The boat is of composite construction and was built by Saunders Roe Ltd., England.

Vickers-Wellesley Aeroplanes

Two of the three machines which left Ismailia, Egypt, on November 5, 1938, reached Darwin, Australia, on November 7. The non-stop distance

flown was 7,162 miles at an average speed of 149 miles per hour. The third machine landed at Koepang, Timor, Dutch East Indies, having flown approximately 6,600 miles along the same course. The previous record of 6,306 miles was held by Russian pilots.

The "Wellesley" aircraft was designed and built to the order of the British Air Ministry by Vickers-Armstrongs Ltd. of England. The machines are fitted with one Bristol "Pegasus XXII," designed and manufactured by the Bristol Aeroplane Co., Ltd., and a three-bladed variable pitch airscrew by Rotol Airscrews Ltd. of Gloucester.

The record-breaking aircraft is a standard Vickers "Wellesley" as supplied to the squadrons of the Royal Air Force, which has been modified for long-range development work.

Turbines

One of the greatest advances in the production of power was the invention by Sir Charles Parsons of the compound steam turbine, patented in 1884.

Parsons first developed his turbine for the purpose of driving electric generators without gearing, and his early machine of about 10 h.p. or so paved the way for those of 200,000 h.p. and over used to-day. Nearly all the power produced by steam, and that means the bulk of the world's power, is generated by turbines.

The turbine revolutionized marine propulsion. To demonstrate its value he built a yacht, the *Turbinia*, which in 1897 attained a speed of $34\frac{1}{2}$ knots, and it was as a result of this demonstration that turbines were adopted by the British Navy, followed by

merchant shipping ; and to-day the turbine is supreme for the propulsion of the largest and fastest ships.

But the greatest value of the turbine has lain in its original purpose—the production of electric power. The development of the turbine and alternator has been such that the cost of generating electricity from steam in bulk is probably not more than half what it would otherwise have been. Of the many important components of the modern turbine, the blades are among the most important, and they are subject to more exacting conditions than any other part. One of the chief difficulties is the prevention of corrosion and erosion, and these have been the subject of much research and development.

At first improvements in boiler-house technique were relied upon to prevent corrosion by improving the standard of purity of steam supply, but the development of stainless steels suggested that a better solution of the problem might lie in this direction. This has proved to be the case, and stainless steels containing a high proportion of nickel and chromium are now well established as the most important blade materials in use.

Erosion of the leading edges of blades is a purely mechanical action and stainless properties are no protection. The blades themselves must be reasonably ductile, but the difficulty is overcome by attaching a shield of high-percentage tungsten tool-steel in the dead-hard condition.

Silicon Steel

Another factor of great importance to electrical development was the invention of silicon steel by Sir

Robert Hadfield. This has resulted in incalculable saving to the manufacturers and users of electrical equipment by the reduction of magnetic losses, which were considerable with the use of iron and mild steel. Sir Robert Hadfield has himself said, "Faraday by his marvellous insight and discovery of the principles of magnetic induction made iron a thousand, nay, a million times more useful. Without the use, however, of the metal iron in the form of silicon steel, as used in generators and transformers, probably only an infinitesimal portion of the energy produced to-day would be available."

Magnetic Alloy—Heavy Alloy

The "theme" of the Hall is necessarily restricted to the progress of Steel. Space does not permit of any similar treatment of alloys of all sorts, many of them entirely non-ferrous and some of them playing a part in our civilization comparable with that of steel itself. A small exhibit shows two of the latest alloy discoveries. One of them a magnetic alloy, the power of which the exhibit exemplifies; the other an alloy having a density half as great again as that of lead, which, at one time, was the densest and heaviest substance known to man. This new alloy was first produced for the purpose of providing for radium a handier and less clumsy protection than the unwieldy lead "bomb," but it has been found to have numerous applications in industry and is, in fact, assuming a position of considerable importance.

Precision of Workmanship

There is a variety of exhibits which it is needless to specify showing the great precision which modern tools have made possible in producing accuracy of workmanship. An object which is beautiful as well as illustrative of this fact is the propeller of a 40-knot destroyer.

Bicycles

There are few simple articles of mechanism by which mechanical progress has been brought home to the ordinary man more than by the bicycle and its development the motor-cycle.

Exactly one hundred years ago Kirkpatrick Macmillan, of Dumfriesshire in Scotland, applied treadles and cranks to the front axle of the "hobby-horse," which the eighteenth century had invented, and thereby produced the ancestor of the pedal-propelled bicycle. In 1842 Macmillan was fined 5s. for knocking down a child—the first record of an offence caused by a mechanically propelled vehicle.

With improved road surfaces came the desire for greater speed, and before the development of geared transmission speed was obtained by increasing the size of the wheel. For a time machines of the type of the racing bicycle of 1884 were the best the manufacturer could provide.

Already hard-wearing steel had made possible the introduction of ball-bearings (invented in 1878 by Dan Rudge of Coventry), while hollow tubing superseded the solid iron frames of the blacksmiths' manufacture.

The "safety" bicycle, more or less as we know it, began to make headway against the old "penny-farthing" or "high" bicycle during the 'eighties. The modern cycles and motor-cycles shown illustrate the highest development of the production of to-day. New alloys have reduced weight and increased strength. Such discoveries as duralumin, almasilium, bronz-aluminium, and molybdenum steel play an enormous part in the perfect modern product. No reliable figures are available for pedal cycles, but over 3,000,000 motor-cycles are in use in the world to-day.

The Motor-car

The same remarks apply with still greater force to the development of the modern automobile. In the adjoining exhibit, side by side with the most modern of motor engines, is shown a perfect scale model of the original "SILVER GHOST"—the de luxe motor of its day. Much as it differs in outward design from the modern car, the internal differences are greater still.

Progress in performance and reliability has depended very largely on improvement in the alloys used. For instance, the importance of the "fatigue" resistance of both ferrous and non-ferrous materials has been fully realized, and work is now being done in the Rolls-Royce Laboratories on fatigue strength at normal temperatures and up to a red heat. Much research on resistance to wear under friction has also been carried out, particularly in connection with bearings, gears, pistons, piston rings, valve guides, and sleeves.

There are many factors of great importance when

considering the suitability of alloys for specific purposes. Some of these are : fatigue strength at service temperatures ; relative resistance to corrosion ; uniformity of internal structure ; notch sensitivity ; damping capacity ; specific gravity ; expansion coefficient ; heat conductivity ; resistance to wear.

The evaluation of these properties and others requires systematic and prolonged investigation in order to ensure the elimination of extraneous factors or influences. Repeated tests or checks are usually necessary to be sure of accurate comparison.

Light alloys have been concentrated on at the Rolls-Royce Laboratories with considerable success, and have resulted in the development of improved casting, forging, and bearing alloys which have superseded those previously used. Most of these have been designated Hiduminium R.R. alloys, since they were developed in conjunction with High Duty Alloys of Slough.

Aircraft

Into aircraft, of course, many other factors enter—matters of design from the point of view of flying efficiency, for instance. The old type of aircraft made up of wood and steel tubing, with a multiplicity of wires and cables—the whole thing covered with fabric—has now disappeared.

The type of structure of the aeroplane, because of the use of light alloys, has altered from that of the strutted structure to the stressed-skin structure. In this, as in a ship, all the stresses are taken by the framework and the outer metal covering, but the framework

is not criss-crossed, as in the past, by a multitude of struts and wires but is now a free space, so that wings rather resemble hollow tapered boxes and fuselages cylindrical empty tubes.

We have to-day aircraft built completely of light alloys derived from aluminium and magnesium of very high quality ; in fact, the metallurgical progress which has been made in aircraft engineering during the last few years has been remarkable.

Aero-engines have developed along parallel lines to the motor-car. More and more light alloys of high tensile strength have replaced heavier metals. Steels have improved immensely in tensile strength and ductility, and completely new cutting tools have had to be devised in order to deal with them.

The use of these metals in aircraft has brought about a complete change in the machinery of production, and the huge presses and other machine tools now required are making aircraft factories very similar to factories for motor-cars and other engineering.

Tubes

Owing to their lightness and strength tubes enter into a vast amount of structural work to-day, and here, again, the advance of metal has made possible advances in the strength and adaptability of tubes and the production of work almost incredible in its fineness and accuracy. Steel tubes in 1939 are instruments of engineering precision, and their shapes are as varied as the jobs they have to do.

The cry of aircraft designers is for greater strength with less weight : steel tubes provide the answer.

The exhibit includes axle tubes from which all needless weight has been eliminated, but which possess almost endless strength. There are aeroplanes flying which have over 5,000 ft. of steel tube in their structure.

Scientists are calling for greater fineness and precision in their instruments. When in 1922 Accles and Pollock produced "the smallest steel tube in the world," with an outside diameter of 0.010 in., there were people who said that the limits of fineness in tube-making had been finally reached. Exhibited here is 1939's "smallest stainless steel tube in the world"; its outside diameter is 0.0039 in. A magnifying glass has been provided so that it may be distinguished from the human hair lying beside it.

And so with every step forward in the technique of manufacture of steel tubes, their usefulness increases. The surgeon and the scientist, the automobile and the aircraft engineers—the thousand and one of the world's industries show to what an extent the world moves on steel tubes.

Beyond Human Vision

Technically among glass-workers glass is named "the metal," but even if this were not the case an exhibit of optical glass could still legitimately be included in a Hall of Metals. Without lenses and the instruments of precision which make use of them, the progress of metallurgical research would be impossible.

The beautiful central focusing point of the exhibit at the southern end of the Hall of Metals is a single lump of optical glass as taken from the pot after removal from the melting-furnace. This weighs 475 lb.

and has a potential value of \$500. The type of glass is light flint and has the following optical properties :

$$N_d \text{ 1.5778 v. 41.0}$$

It is used principally in the manufacture of prisms for high-grade binoculars, as used by the Fighting Services. Various rough lens and prism mouldings made from similar lumps are shown in progressive stages of manufacture, culminating in a polished pentagonal prism ready for use in an optical instrument.

Two rough lumps of coloured glass are shown and a range of finished photographic filters.

Scientific Instruments

On either side of the central object are shown a wide variety of scientific instruments as used by the ordinary man in his every-day life, by the scientist in the research laboratory and the technician in the field. Over 20 firms have contributed to this display in which an effort is made to show the actual uses of the instruments exhibited in a manner which can be understood by the non-technical.

From Mines to Millions

Between the Hexagon and "Thunderbolt" an exhibit shows graphically the rise in value of iron from the crude ore to various forms of the completed article.

Although iron is generally looked upon as the cheapest of metals, its value is very high in many of the forms in which it is used, as shown in the "Mines to Millions" exhibit.

In the main this increase is due to the alloying of small amounts of other metals with the iron, to the annealing, hardening, and tempering treatment which is applied to it, and very largely to the shaping processes ; except in the first change from ore to pig-iron, in which case it is partly owing to the fact that two or three tons of ore are required to make a ton of pig-iron.

The steel billet is, in general, the raw material for the succeeding products, and when of mild (fairly low carbon content) composition it is the cheapest form in which steel is ordinarily sold.

The metal is shown lastly in the form of hair springs, the value of a ton of which is more than three million times that of a ton of iron ore.

To put this in another way, the value of watch-springs costing 16 million dollars per ton made of steel would rise to only $17\frac{1}{2}$ million dollars per ton if they were made of gold.

Precision with Size

Facing the exhibits described above, and on the other side of "Thunderbolt," is an exhibit which shows, perhaps, one of the ultimate possible products of non-ferrous metals. In no work is accuracy of design and finish more important than in ships' propellers, and this exhibit which has been arranged by J. Stone & Co., Ltd., of Deptford shows by means of a full-size photograph of the propeller of the *Queen Mary* the precise finish, as accurate almost as that of a watchmaker, applied to a product of enormous size. The laws which govern the exact angle at which a propeller blade must be fixed and the exact curve of

its surface are very complex, and varying in fact in the case of individual ships. Some idea is given of this in the models which are shown and in the smaller highly finished propeller which is displayed alongside the photograph. These are "Heliston" propellers, in which the best combination of pitch, diameter, and surface is chosen to give the highest propulsive efficiency.

Civil Aviation

Before leaving the Hall of Metals the visitor will see an exhibit representative of British civil aviation. Two examples of the most up-to-date aero engines of British manufacture are displayed, while suspended above them are models of some of the latest types of aircraft, viz. :

De Havilland "95" (Frobisher class)

The new Frobisher class of air liner now in service on the European routes of Imperial Airways. It has four De Havilland "Gipsy Twelve" engines, each of 525 h.p., a speed of 234 miles an hour, and accommodation for 22 passengers.

Built by the De Havilland Aircraft Company.

Fairey Civil Transport F.C.1.

A civil transport aeroplane built for British air lines under arrangement with the British Air Ministry. It has four 1,000 h.p. engines, and a maximum speed of 275 miles an hour, and accommodation for 30

passengers and 5,000 lbs. of baggage or mails. Take-off and landing are facilitated by the use of an auxiliary wing, which in effect converts the aeroplane into a low drag sesquiplane for take-off and a flapped high-drag monoplane for landing.

Built by Fairey Aviation Company.

Imperial Flying Boat

The Imperial flying-boats are used on the main Empire routes of Imperial Airways. They have four "Pegasus" engines each of 740 h.p., a speed of 200 miles an hour, and accommodation for 15 passengers. Flying-boats of this class made the North Atlantic survey flights in 1937.

Built by Short Brothers (Rochester & Bedford) Ltd.

Short Mayo Composite Marine Aircraft

This composite aircraft has been constructed for long-range experimental flights. To overcome the difficulty of launching long-range aircraft into the air with the maximum load, including fuel which can be carried once it is in flight, the heavily loaded upper component is assisted into the air by the lower component. When a suitable height is reached the two components separate, the upper proceeding on its journey and the lower component returning to its base.

The lower component "Maia," a high-wing monoplane flying-boat, has four "Pegasus" engines of 740 h.p. and a speed of 200 miles an hour. The

THE HALL OF METALS

upper component "Mercury," a high-wing seaplane, has four "Napier Rapier" engines of 340 h.p. and a speed of 207 miles an hour. It holds the world's long distance seaplane record with a non-stop flight of 5,598 miles. The "Mercury" also holds a number of records for Atlantic flights.

Built by Short Brothers (Rochester & Bedford) Ltd.

At the back of the exhibit is a large copper map showing British air routes throughout the world.

The display work in the Hall of Metals is by the Reimann School and Studios.

Magna Carta Hall

MAGNA CARTA holds a unique position in the unending and world-wide struggle for liberty and freedom. For centuries to the people of England and, indeed, of the United States of America also, it has been a symbol of that struggle. The original document is therefore a fitting exhibit at the World's Fair, an object of interest and indeed of reverence to all who, to whatever nation they belong, believe that the fight for freedom is eternal and the inspiration to continue the struggle may be strengthened by some knowledge of the heroes of old.

Needless to say, democracy does not owe its evolution entirely to the Charter extorted from the English King John in 1215. The battle has been long ; victory and defeat follow one another through the centuries. It seems fitting, therefore, even though Magna Carta occupies the centre place, to indicate in this Hall, pictorially and otherwise, a few of the other landmarks in this struggle. To Americans the earlier stages are naturally the more interesting, inasmuch as they exercised a profound influence on the political thought and the institutions of their Republic. An interesting, perhaps an unexpected link between Magna Carta and the history of the United States of America is provided by the pedigree of George Washington, showing as it does his descent not only from King John himself but from nine of the twenty-five Barons who became sureties for its due execution.

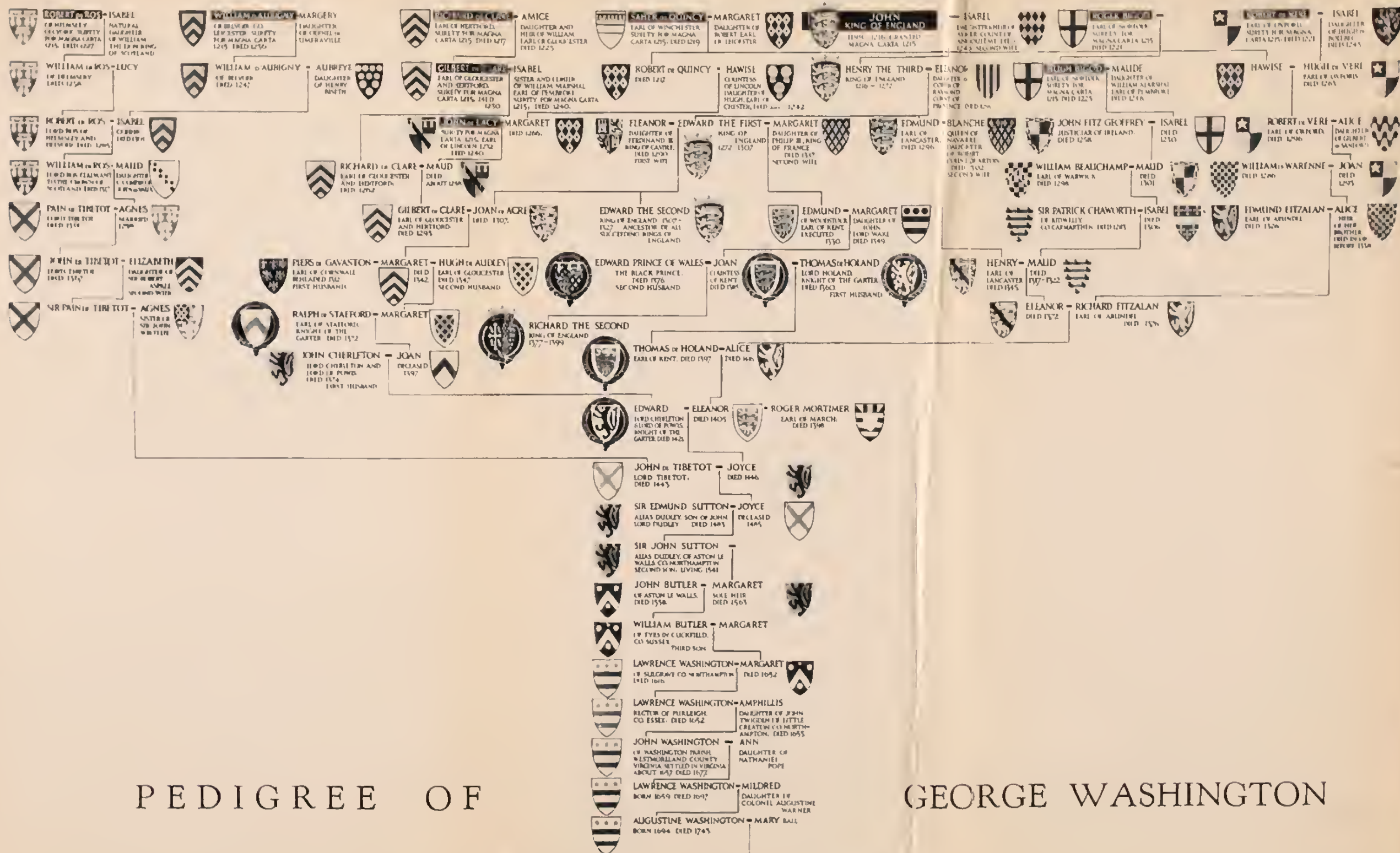
In the early days of kingship in England the king was expected "to live of his own." Regular dues added to the produce of his own manors sufficed for

the ordinary expenses of his household and for what government administration was necessary to those simple times. But wars abroad called for more money than could be thus provided. King Richard I (Cœur de Lion) had to find money for his Crusade (1190), and for that purpose he sold to many towns in England a charter giving rights to these young and growing communities. Democracy in England owes its strength to a long-established tradition of local government. The picture of Richard sailing to the Third Crusade calls to mind the growth of the trading class clustering in the towns, who were beginning to assert their rights and later were to receive some consideration in the Great Charter.

The picture, the work of Mr. Glyn Philpot, R.A., is copied from the original now in the House of Commons in London. The Charter nearby, a facsimile of that of the City of Oxford, gives some idea of the privileges that the burgesses of a City desired in the thirteenth century.

As regards the Great Charter itself, a translation or summary of the main clauses will be found on each side of the dais where it stands. Over seven centuries ago it was extracted from a reluctant king by the barons, the Church, and the citizens of London. Since that time both England and American historians have expended much research upon it. Even though some may rank it as merely one of the political bargains of the Middle Ages, none can deny that its comprehensiveness, its financial provisions, its clauses affecting barons, clergy, townsfolk, and even serfs, gave it a unique value as a rallying point throughout the ages for all English-speaking lovers of liberty.

THE DESCENT OF GEORGE WASHINGTON FROM KING JOHN AND NINE OF THE TWENTY FIVE BARONS SURETIES OF MAGNA CARTA



PEDIGREE OF

GEORGE WASHINGTON



GEORGE WASHINGTON
FIRST PRESIDENT OF THE
UNITED STATES OF AMERICA
BORN 1732 DIED 1799

MARTHA
DAUGHTER OF
JOHN LANE BAKER
AND WIFE OF J. B.
DANIEL PARKER CUSTE

The growth of liberty in England did not depend solely on the evolution of Parliament. The Common Law of England provided a barrier of increasing strength against all who endeavoured to infringe or destroy the rights of the individual. The prints of Westminster Hall, the early seat of the King's Courts, show a majestic building dating from the days of William Rufus (1100), the centre from which justice was dispensed. The lawyers and Parliament were always good friends. The very name, the High Court of Parliament, is an indication of the relations between them. The copy of Lord Mansfield's celebrated judgment of 1772 serves as a reminder of the importance of England's judiciary.

For seven hundred years Writs of Summons have been issued when the Three Estates, Clergy, Lords, and Commons, were commanded to attend Parliament—usually to consider ways and means of raising money.

The ultimate control of Parliament over king rested on the power of the purse. Magna Carta marked an important stage in this development. When once Parliament had asserted its right to control all the taxes, the power of the king was definitely restrained. "Redress of grievances before supply" and "What touches all must be approved by all" were the watchwords through stormy centuries. The picture of Sir Thomas More refusing a subsidy, an emergency tax, when it was demanded by Cardinal Wolsey, the Minister of King Henry VIII, shows the Speaker of the House of Commons asserting the rights of Parliament. The original picture, the work of Mr. Vivian Forbes, now adorns a corridor in the House of Commons.

In the evolution of Parliament the liberty of members to speak frankly on the floor of the House was essential. Charles I (1625) attempted, but failed, to arrest members of the House of Commons who dared to do so. The Petition of Right, of which a facsimile is shown, points out boldly, without fear of the consequences, the grievances under which the English were suffering under an autocratic king, and restates the ancient liberties they were prepared to defend in the coming years by force of arms (Execution of Charles I, 1649).

A very real danger still remained to those lovers of freedom who dared to lift their voices against tyranny or injustice. The king might throw them into prison and keep them there indefinitely without trial. The Habeas Corpus Act, of which a copy is shown, gave to the judges the right to demand from the governor of the prison the presence of the prisoner in court, so that the processes of justice might continue without undue delay.

Such a barrier against an autocratic executive was only effective if the judges were free from royal control. The Bloodless Revolution and the accession of William III in 1689 settled (by the Bill of Rights) that and many other questions, though it was not definitely enacted until 1701 by the Act of Settlement, that judges should remain in office *quam diu se bene gesserint*, so that the king had no power to remove them. A copy of that Act, "The seal of our constitutional rights, the last great statute which restrains the power of the Crown," is the natural conclusion to this short series of historic documents.

A series of six photographs of contemporary prints

may give some idea of the evolution of Parliament, particularly of the growing strength of the House of Commons. The old ceremonies may be still preserved—as, for example, when the Royal assent is given to a Bill. The final photograph serves to link the present with the past.

The gradual growth of British liberty and of the Constitution “broadening down from precedent to precedent” cannot be traced further in this Hall. When the American colonies separated themselves from England their own Charter, the Declaration of Independence, gave them a new starting-point. But from the point of view of the evolution of the ever-changing constitution of the British Commonwealth of Nations, the picture of the Coronation of King George VI by Mr. Frank Salisbury serves to bring the story down to the present day. The gorgeous ceremonial, the old-world costumes, the pomp and formality serve to remind one of the struggles of the past. No longer are barons and people forced to combine against kings striving to destroy their ancient rights or to stifle their just complaints. Kings are no longer the dangerous enemies of freedom. To-day the members of the British Commonwealth of Nations and of the British Empire as a whole can regard their Sovereign as a symbol of unity, as a repository of trust, and as the natural focus of their loyalty and affection.

The Art Gallery

NOTE by SIR KENNETH CLARK, K.C.B., M.A.,
Director of the National Gallery, London

THIS exhibition has been selected to show the main tendencies of English painting during the last fifty years. It begins with the period of the New English Art Club, which represented an effort to break away from the banalities of current academic painting and graft impressionism on to the tradition of Constable, Turner, and Gainsborough. Mr. Wilson Steer, who has been the acknowledged leader of the group for more than forty years, takes his place naturally beside these masters. His influence is apparent in such painters as Philip Connard and Ambrose MacEvoy, who attempted to do for the portrait what Steer had done for landscape. At the beginning of this century nearly all the leading painters were associated with the Slade School, which produced such brilliant pupils as Orpen, MacEvoy, and John. Although now popularly known as a portrait painter, Augustus John is at his best in his romantic Welsh landscapes with figures, of which there is a carefully chosen group in the exhibition, and his masterly drawings. Both these aspects of his talent are combined in his great decorative cartoon *Galway*.

The other movement which influenced the course of English painting during this period is associated with Walter Richard Sickert. He too revived the native tradition by an infusion of French style, but his masters were Degas and Whistler rather than the impressionist landscape painters. Sickert has a certainty of tone and an economy rare in English art, and this is combined with an Hogarthian appetite for popular life

which gives his best work something more than pictorial interest. He is represented in the exhibition by one or two of his early landscapes of Dieppe, some characteristic interiors of music halls, and his moving comment on middle-class life entitled *Ennui*. Round Sickert were grouped such men as Gilman and Spencer Gore, and his influence is still felt in the work of such young painters as Victor Pasmore.

Two other painters of the older generation should be mentioned—Sir William Nicholson, who has used the Whistlerian tradition with personal vision, and Ethel Walker, who is represented by her delicate portraits and one of her large decorations.

Although it is impossible to simplify the tendencies of post-war painting in England, we may make a rough distinction between those who are chiefly concerned with recording their delight in the visible world and those who are anxious to express a personal, poetical vision. In the first category we may place Duncan Grant and Matthew Smith, for although both have created their own worlds, they have done so through the joy of the senses. Duncan Grant has a spontaneous gift for decoration which, at his best, is combined with naturalism as in an Elizabethan lyric. Unfortunately, it has not been possible to include his finest decorative panels, but he is represented by some early work in this manner, notably *The Ass* and *The Tight-Rope Walker*, and by one of his later landscapes in the tradition of Constable. Matthew Smith, in a narrower range, has achieved a saturation of colour which gives his work real intensity. Somewhere between realism and poetry we find the peculiarly English figure of Stanley Spencer. He is a

belated pre-Raphaelite, whose early work has a visionary quality, but who, when no longer obsessed by certain shapes and incidents, is an almost photographic realist. Among the poets we may place Paul Nash, subduing all nature with a kind of wintry simplification, and Graham Sutherland, whose peculiar vision, deriving from Blake and Palmer, seems to give some of the richness and mystery of nature without obvious references to natural form. A poetical strain proper to English painting is visible in many of the best younger artists, and from this point of view Surrealism has had a liberating influence in England. This poetry is most naturally expressed in the familiar English medium of water-colour. The Nashes, David Jones, Francis Hodgkins, Graham Sutherland excel in this medium, and even Henry Moore, whose sculpture shows a severe concentration on problems of form, does drawings full of romantic colour. There is, however, a body of abstract painters, represented in the Exhibition by Ben Nicholson, who aim at the utmost purity from any human association. As a reaction against pure abstraction we may notice a group of young painters, represented by William Coldstream, who believe that absolute fidelity to visual appearances can be justified by sensibility.

It is hard to believe that English painting will ever be radically different from what it has been in the past. Charm, freedom, a native elegance, and poetry are more natural to English painters than power of composition or the other branches of technical achievement. The selection here exhibited, incomplete as it is, may give the flavour of English art more truly than would be possible in a larger and more formal selection.

Official Printing

On the mezzanine floor of the main staircase leading up from Magna Carta Hall is an exhibit of British official publications arranged by H.M. Stationery Office. Specimens of early forms of official publishing in Great Britain are shown as well as types of official publication now issued, and these illustrate the activity of government in our time. The modern exhibits show that much greater attention is now being paid to the printing and appearance of official publications in Great Britain than heretofore.

Barclay's Bank

A branch of Barclay's Bank (Dominion, Colonial, and Overseas) has been installed in the Pavilion, where the customary banking facilities are available.

Cinema

A cinema is included in the Pavilion, where films relating to life in the British Isles may be seen. Dominion and Colonial films are also shown.

The British "Buttery"

A "Buttery" for light refreshments is provided at the west end of the Pavilion next to the Art Gallery. Here, on a terrace facing the English Garden, visitors may rest and refresh themselves with their favourite

beverage, whether it be tea taken in the English fashion, coffee, cocktail, beer, or an English whisky and soda, more familiarly known to Americans as a “highball.” It is hoped that the tired sightseer may find here a pleasant oasis from which to observe the passing crowds and, during certain periods, to listen to the band playing in the bandstand at the east end of the Garden.

Tea Exhibit

Near the “Buttery” will be found an exhibit, arranged by the International Tea Market Expansion Board, which includes specimens of tea from India and Ceylon and indicates the districts in which the teas were grown. Coloured photographs of scenes in tea gardens in those countries are also shown, with coloured maps and graphic phrases regarding tea.

Textile Furnishings

Liberal use is made of textiles in several sections of the Pavilion as the background for display.

The materials used are all of British manufacture, and have been supplied through the Trade Associations of England and Ireland to the general requirements of the architects, whose desire it was to employ textures and designs of current manufacture, rather than to create special types.

Curtains of rayon velvet in a shade of gold form the background in the Court of Honour to the section of Britain in Heraldry, and in the Silver Room an interesting cotton weave in blue and white is employed.

The walls of the annexe in which the Crown Jewels are shown are hung with a "waved" repp of cotton and rayon in a shade of garnet (British Colour Council No. 160). The case in which the Crown Jewels are shown is hung with a drapery of silver-grey velvet, giving a pleasing contrast in texture as well as colour.

Drapery has been used completely for the Magna Carta Hall. The walls to a height of 21 ft. are hung with a cotton velour in a warm shade of cream, decorated with a stencilled design, the crown of King John in pale gold. These hangings are surmounted by a shaped pelmet of the same cream velour, trimmed with gold, from beneath which the hangings are lighted.

In the centre of the Hall, which is approximately 105 ft. by 97 ft. 6 in., is a dais, 27 ft. 6 in. by 60 ft., over which is a canopy, the ceiling of which is carried out in a satin, screen printed in shades of "Garter" blue, with a design in gold representing a coffered ceiling. This and the needlework referred to below are the only two textiles which are not standard productions.

At the end of the dais, in a setting of red mercerized cotton velvet, trimmed in red and gold, is the case housing the Magna Carta. The base of this is decorated with hand-tooled leather, having a background of red, and a trellis and fleur-de-lis design in gold.

Magna Carta itself is framed in a special needlework the design of which was inspired by manuscripts in the Bodleian Library and at Trinity College, Cambridge.

The dais is covered with a Wilton carpet, mottled in two shades of gold.

The walls of the Art Gallery are treated with a new specially prepared textile which is hung in the same manner as wallpaper. It is damp-proof and washable and is a British invention.

The curtains in the "Buttery" are in a heavy cotton cloth in a broken effect of orange red.

A British lace net is being used throughout the Administration Block.

The settees in the Pavilion, the upholstery materials and covering of which are all of British manufacture, were designed specially for the Exhibition by the architects.

Also made in England, and selected to harmonize with the external colour scheme of the Pavilion, is the long triple series of awnings which are a feature of the garden front.

The English Garden

This enclosed garden of about three-quarters of an acre has been designed by Mr. Percy S. Cane to give a typically British setting to the long façade of the building.

The straightforward lines of the planning give a feeling of breadth and space which a greater elaboration of treatment might have destroyed. The generously wide borders are planted to give bold masses of harmonious colour, and large trees have been introduced for the value of their light and shade and additionally for the feeling of maturity which older trees alone can give. Paving stone was shipped from England and consists of old stone slabs taken from Whitehall Gardens and the Tower of London.

Bands

The Band of H.M. Coldstream Guards will play daily from April 30 to May 27, and the Band of the 1st Battalion The Black Watch (Royal Highland Regiment) from September 12 to the end of the exhibition, in the bandstand at the east end of the garden.

Australia

COMMISSIONER-GENERAL : MR. L. R. MACGREGOR,
Australian Government Trade Commissioner

THE Australian Government exhibit depicts three special aspects of the present development and the potential progress of the southern continent, viz. wool, secondary industries, and the attractions of travel. So that visitors to the Fair may obtain first-hand information on Australian affairs an enquiry office has been installed.

The Wool Section is no mere display of merchandise, but seeks through action exhibits, colour, and mural decoration to give an impression of the world's most important wool-producing country, which pastures over 110,000,000 sheep. It seeks to give visitors some idea of the extensive plains and the large flocks which graze there. It emphasizes the effective organization of the industry as an item of interest for the American producer. A series of show windows displays a range of the finest fabrics manufactured from Australian wool in the world's best factories, and demonstrates that not only has Australia used science to perfect the product of the sheep, but that science has been harnessed to increase the beauty, the health-giving properties, the wearing qualities, and the comfort of woollen garments. The modern tendency towards the use of wool specially designed to meet the needs of each of the seasons is emphasized—for Australia looks towards a world of to-morrow clad in the finest woollen fabrics, from which it will derive artistry in clothing as well as health.

The Industry Section has been planned more to attract the attention of American investors than as a display of manufactured goods. Already a large amount of American capital is invested in Australian industries, and Australia is looking towards the investor in the world of to-morrow to help her to an increasing extent in the development of the Australia of to-morrow. Display devices illustrate the diversity of Australian industrial resources and production and show the environment of such industries, which produce goods to the value of nearly 900,000,000 dollars per annum. This section shows that Australia to-day is not solely a primary producing country, and prophesies Australia's rise as a great industrial nation in the world of to-morrow. It shows, in addition, how Australia has successfully experimented in the sphere of industrial arbitration systems which have contributed substantially to harmony between employer and employee. Here is a phase in which Australia believes she has already entered the world of to-morrow, and it will interest those, both employers and employees, who are to-day wrestling with the problem of harmonious industrial co-operation.

Australia believes that she has a considerable destiny to play in the world of to-morrow as the playground of thousands, who will come by air and sea to enjoy her equable climate, her wide range of scenery, her golden beaches and modern cities, and to mingle with her hospitable people. Action exhibits and coloured scenes depict these attractions of to-day which are being developed for the visitors of to-morrow. A museum display in a modern setting depicts the unique birds and animals for which Australia is known

A U S T R A L I A

throughout the world—the gentle koala, the platypus, which might be regarded as a link between bird, animal, and fish, and birds of brilliant plumage.

The pavilion is air-conditioned, and the architects are Stephenson and Turner of Sydney and Melbourne.

New Zealand

COMMISSIONER-GENERAL: MR. R. M. FIRTH,
New Zealand Trade and Tourist Commissioner

THE New Zealand Exhibit, assembled by the New Zealand Government Department of Publicity and erected in collaboration with Mr. Edward D. Stone, one of New York's foremost architects, is designed to portray not only the variety of scenic and sporting attractions of the Dominion, but also its commercial and industrial developments and the activities of its people.

Entering the main doorway, the visitor finds a typical New Zealand forest scene in which specially imported native shrubs and ferns are utilized to present a truly natural display.

A mechanical map of the Dominion indicating the various points of interest adjoins this first exhibit, and beyond is a Maori village-setting where the progress of this native race is graphically depicted from their arrival in New Zealand, thirteen centuries ago, until to-day, when many of their descendants are prominent in Dominion life.

In miniature are presented hot lakes set in tropical verdure, glaciers that travel down mile-high mountainsides, underground caverns illuminated by myriads of glow-worms, and fiords running miles inland and flanked by forest-covered precipices.

The sporting displays provide deep-sea anglers, trout fishermen, and hunters with convincing evidence of New Zealand's ability to satisfy their desires.

NEW ZEALAND

A colourful display of Samoa, New Zealand's South Sea island possession, is included.

The general well-being of the community in everyday life is depicted in a way that will appeal to the prospective home-maker.

British Colonial Empire

THE British Colonial Empire display, organized by the Colonial Empire Marketing Board, includes six main sections, representing the geographical groups of Dependencies, each containing a realistic diorama of a typical local scene, decorative panels, and a map frieze. Views of the life and work of the peoples of the Empire are shown in series of continuously changing photographs arranged as follows :

EAST AFRICA SECTION

Kenya, Uganda, Tanganyika, Northern Rhodesia, Nyasaland, Somaliland, and Zanzibar.

WEST AFRICA SECTION

Gambia, Gold Coast, Nigeria, Sierra Leone, and St. Helena.

MALAYA AND THE FAR EAST SECTION

Straits Settlements, Federated and Unfederated Malay States, Sarawak, North Borneo, Hong Kong, Fiji, and the Western Pacific Territories.

WEST INDIES SECTION

Barbados, Bermuda, The Bahamas, British Guiana, British Honduras, Jamaica and Dependencies, Trinidad and Tobago, Leeward Islands, Windward Islands, and the Falkland Islands and Dependencies.

MEDITERRANEAN SECTION

Malta, Gibraltar, and Cyprus.

INDIAN OCEAN SECTION

Ceylon, Mauritius, Seychelles, and Aden.

The central display in the exhibit consists of a giant photo-mural, and this, together with a spoken commentary describing the public services and social work in the Dependencies, tells how Great Britain, in fulfilling her trusteeship, is advancing the physical and cultural development of the peoples of the Colonial Empire, and to what extent the United States is assisting in this development. The mural has five panels depicting the following branches of the above services : Administration and Education, Communications, Agriculture and Animal Husbandry, Health, and American-British Co-operation.

Other features are a comprehensive display of Colonial postage stamps and a "press button" information service by means of two automatic machines, one giving particulars of the exports of the individual Dependencies and the other acting as a "Travellers' Guide."

Visitors can obtain brochures and full information regarding the British Colonial Empire at an Information Bureau.

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Bradford.
Kent.
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Chamber of Shipping of the United Kingdom.
Liverpool Steam Ship Owners' Association.
Anchor Line Ltd.
Bristol City Line.
Canadian Pacific Railway Company.
Clan Line Steamers Ltd.
Cunard White Star Ltd.
Elder Dempster Lines Ltd.
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SUBMARINE CABLES SECTION

Submarine Cables Ltd.

OLD MARITIME CHARTS, ETC.

The Antiquarian Booksellers' Association.

ATTRACTIONS OF BRITAIN HALL

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FINE WOOLLENS EXHIBIT

The Fine Woollen Export Trade Committee.

Manufacturers

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J. H. Binns & Co., Ltd.
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Doulton & Co., Ltd.
Mintons Ltd.
Royal Crown Derby Porcelain Co., Ltd.
Josiah Wedgwood & Sons Ltd.
Worcester Royal Porcelain Co., Ltd.

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United Tanners' Federation.
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Bolton Leathers Ltd.
Connolly Bros. (Curriers) Ltd.
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HALL OF METALS

Industrial Associations, Museums, individual firms, and private individuals have all contributed to the composition of the Hall of Metals. It is desired to acknowledge with thanks the public-spirited efforts of the following :—

HEXAGON

Mr. N. Phillips Bedson (*Portrait of Cort*).
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“ Building ” (*Photograph of Fulham Power Station*).
The Butterley Co., Ltd. (*Photographs of Castings*).
Central Electricity Board (*Photograph of Transmission Tower*).

HALL OF METALS—*contd.*

- Dorman, Long & Co. Ltd. (*Specimens of Steel Sections*).
- English Steel Corporation Ltd. (2 Drills, 3-in. dia.).
- French Railways—National Tourist Office (*Photograph of Eiffel Tower*).
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- Hadfields Ltd. (*Manganese Steel Rail, Cast Steel Wheels, and Various Tools, Plaque of Faraday, Photograph of Sir Robert Hadfield*).
- Holman Bros. Ltd. (*Rock Drill*).
- The International Combustion Ltd. (*Photograph of Machinery Castings*).
- International Construction Co. (*Photograph of Morgan Mill*).
- L.M.S. Railway Co. (*Photograph of Euston Station*).
- Mr. J. Malbon (*Photograph of Darby*).
- The Metal Box Co., Ltd. (*Photograph of Tin Plate*).
- Oil Well Engineering Co. (*Oil Drill, Fish Tail Bit, Core Drilling Head*).
- Samuel Osborn & Co., Ltd. (4 Drills, 1 Sheet of Blue Steel, 1 Metal Shaving, *Photograph of Mushet*).
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HALL OF METALS—*contd.*

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HALL OF METALS—*contd.*

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The Sun Cycle & Fittings Co., Ltd. (*Bicycle*).

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De Havilland Aircraft Co. (*Model De Havilland*
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Fairey Aviation Co. (*Model Fairey Civil Transport*).

Rolls-Royce Ltd. ("*Merlin*" *Engine*).

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HALL OF METALS—*contd.*

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HALL OF METALS—*contd.*

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The following sculptors and artists have contributed to the decoration of the Pavilion :

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Mr. A. F. Hardiman, A.R.A.
Mr. F. P. Morton.
Mr. Sigmund Pollitzer.
Mr. Barney Seale, A.R.B.S., R.B.A.
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Mr. Alfred E. Taylor (*Map*).

SCULPTORS AND ARTISTS

MAGNA CARTA HALL

Students of the Royal College of Art.

Mr. E. M. Dinkel, A.R.C.A.

Miss Marjorie V. Duffell.

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